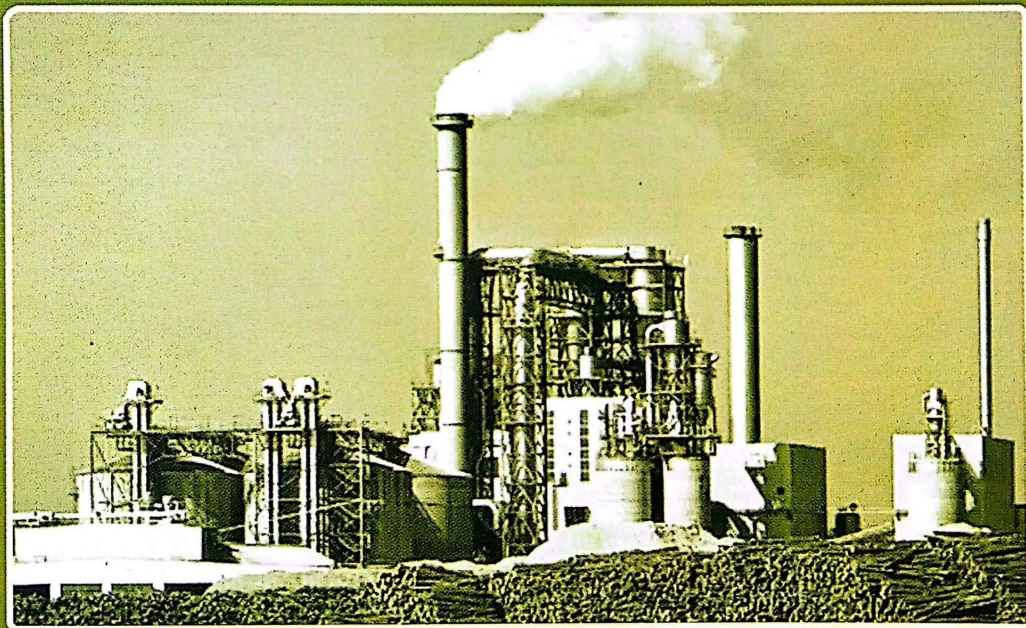


INDUSTRIAL ECONOMICS and FOREIGN TRADE



Dr. Johnson T.T.

As Per KTU Syllabus for B.Tech Sem V & VI

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Industrial Economics and Foreign Trade

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Preface

As a teacher in Economics, I felt the need of a book which can really help the students in preparing for the University exam. I understood the real problem which the students and teachers were facing was covering the syllabus in limited time.

Further, the syllabus is new to the teachers and some of the teachers shared their apprehension about the content and to what extent they should cover a topic. Taking these matters into consideration, I have prepared this book. My primary intention was to deliver a book which can be as simple as possible, at the same time covering the entire syllabus in a short and precise manner which will especially help the students in preparing for the exam.

Wherever necessary, numerical examples are given, which would help the students to understand the concepts properly and to solve numerical problems expected for the university exam. I am confident that this book can help a student to prepare for the University exam in the easiest way possible.

While preparing the book I referred the works of many authors and websites and I am thankful to them. I also acknowledge the inspiration given by my wife Juno and daughters Mili and Jamie for the completion of this book.

Any kind of mistakes may please be informed. Suggestions are also welcomed for the improvement of this book in any form.

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Syllabus

Module 1

Basic Concepts and Demand and Supply Analysis: Scarcity and choice
Basic economic problems- PPC – Firms and its objectives – types of firm
Utility – Law of diminishing marginal utility – Demand and its determinants
– law of demand – elasticity of demand – measurement of elasticity and
applications – Supply, law of supply and determinants of supply
Equilibrium- Changes in demand and supply and its effects – Consumer
surplus and producer surplus (Concepts)- Taxation and deadweight loss.

Module 2

Production and Cost: Production function – law of variable proportion
returns to scale – economies of scale – internal and external economies
Isoquants, isocost line and producer's equilibrium – Expansion path
Technical progress and its implications – Cobb-Douglas production function
- Cost concepts – Social cost: private cost and external cost – Explicit and
implicit cost – sunk cost - Short run cost curves - long run cost curves
Revenue (concepts) – Shutdown point – Break-even point.

Module 3

Market structure: Perfect competition and imperfect competition
monopoly, regulation of monopoly, monopolistic competition (features and
equilibrium of a firm) – oligopoly – Kinked demand curve – Collusive
oligopoly (meaning) – Non-price competition – Product pricing – Cost plus
pricing – Target return pricing – Penetration pricing – Predatory pricing -
Going rate pricing – Price skimming.

Module 4

Macroeconomic concepts: Circular flow of economic activities – Stock and
flow – Final goods and intermediate goods - Gross Domestic Product
National Income – Three sectors of an economy- Methods of measuring
national income – Inflation- causes and effects – Measures to control
inflation- Monetary and fiscal policies – Business financing- Bonds and
shares -Money market and Capital market – Stock market – Demat account
and Trading account - SENSEX and NIFTY.

Module 5

International Trade: Advantages and disadvantages of international trade - Absolute and Comparative advantage theory - Heckscher - Ohlin theory - Balance of payments – Components – Balance of Payments deficit and devaluation – Trade policy – Free trade versus protection – Tariff and non-tariff barriers.

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Chapter 1

Basic Concepts

1.1 Introduction

Industrial economics is that branch of economics which deals with the economic problems of firms and industries, and their relationship with society. The name Industrial Economics was adopted in the early fifties through the writings of P W S Andrews.

There are two broad elements of industrial economics. The first one, known as the descriptive element, is concerned with the information content of the subject. It provides information to the industrialist or businessman regarding industrial organisations, natural resources, factors of production, industrial climate, trade and commercial policies of the government and the degree of competition in the business in which he operates. The second element of the subject is concerned with the business policy and decision making. This is the analytical part dealing with topics such as market analysis, pricing, choice of techniques, location of plant, investment planning, product diversification etc. This is more important and much of the available theories of industrial economics is concerned with this.

An economic problem arises because of the scarcity of resources and their alternative uses in relation to the needs. For a producer, the resources like land, raw materials, capital etc. are scarce. Therefore, he has to take decisions regarding production and distribution. There are several areas in which a producer has to take decision. That is, what commodity he should produce, how much should be produced, what type of technology he has to use, what price he should charge, how much he should spend on advertisement, etc. All such decisions explain the producer's behavior and which are studied under industrial economics. In microeconomics also we study such decision making and hence some economists consider industrial economics as an elaboration of microeconomics.

What is economics?

Different economists have defined economics differently. Adam Smith who is considered as the father of Economics has defined economics as "*An Enquiry into the nature and causes of wealth of nations*". In general, classical economists have defined economics as the *science of wealth*. But the classical economists have given undue importance to wealth.

Neoclassical economists defined economics in terms of welfare. Alfred Marshall a neoclassical economist defined economics as "*--- study of mankind in the ordinary business of life. It examine that part of individual and social action which is most closely connected with the attainment and with the use of material requisites of wellbeing*". Thus Marshall says that economics is the study of how individuals and the society acquire material requisites(wealth) for their welfare. But his definition also has certain

Microeconomics and macroeconomics

These are the two broad branches of economics. *Microeconomics is the study of individual economic units.* That is the study of individual consumer, firm, price of a particular commodity etc. Microeconomics mainly deals with pricing of goods and factors of production and hence it is also called price theory. As price determines everything resource allocation is a major concern of microeconomics. It is partial equilibrium analysis and hence it is always based on the assumption other things remaining the same or ceteris paribus.

Macroeconomics is the study of the economy as a whole. In other words it is the study of aggregates. That is aggregate demand, aggregate supply, general price level, aggregate savings, aggregate investment, national income etc. Since it deals with the determination of income and employment in an economy, it is also called 'Theory of income and employment'. Problem of unemployment, inflation, deflation, economic growth and international trade etc. are the major topics covered under macroeconomics.

1.2 The problem of scarcity and choice

Human wants are unlimited. For an ordinary human being it is true. When a man satisfies one want another want will crop up. A particular want may be satiable but the same want may return after a period of time. Hence wants are not only unlimited but they are recurring also.

At the same time resources to satisfy these unlimited wants are limited or scarce. Scarcity means that society has insufficient productive **resources** to fulfil all human wants and needs. At any one time, only a limited amount of goods and services can be produced. This is because the existing supplies of resources are extremely inadequate. Scarcity is the fundamental economic problem. All other economic problems arise because of the scarcity of resources.

The problem of scarcity of resources is applicable to an individual, a business firm or a nation. For example, in a business firm availability of funds may be limited and what is available may be demanded by different departments to fulfil their needs. Production department will be in need of money for purchase of new machines but marketing department may also demand the same funds for its new marketing campaign.

Since resources are scarce it should be utilised in the most efficient as well as productive manner and resources should not be wasted or kept idle.

The scarce resources have alternative uses. That is the same resource is capable of satisfying different needs. For example, a piece of land can be used for the construction of a park, a factory building or growing vegetables. But, at a time it can be put to one use only. This creates another important problem that is the problem of choice. From competing needs, we have to select the most urgent wants for their fulfilment. Decision making or choice is a difficult task and economic theories help to attain the optimum use of available resources.

1.3 Basic economic problems

Scarcity of resources creates a few basic economic problems in every economy. These are the central problems faced by developed as well as developing countries. Since resources are scarce an economy cannot provide everything that is demanded by its people. Therefore, the following basic economic questions are to be answered.

1 What to produce and in what quantities?

Since, the resources are scarce an economy cannot provide everything to its people. Therefore, it has to decide what type of goods are to be produced, that is- more consumer goods or capital goods, necessary items or luxury items. When more of one item is produced less of the other item can be produced. This is the case of a firm or a nation. Once the type of goods are decided then their quantities are also to be decided.

2 How to produce?

The second question deals with the production technique. A given good can be produced by different techniques, mainly with the help of labour-intensive technique or capital-intensive technique. For example, cloth can be weaved in power looms or hand looms. One is capital intensive and the other labour intensive. Both the techniques have its own merits and demerits. As labour intensive technique create more employment opportunities and helps to solve the problem of unemployment, capital intensive technique encourages economic growth.

3 For whom to produce?

This question deals with the problem of distribution. That is how the produced goods, that is the national product is to be distributed among the agents of production. In a capitalist economy it is based on ability to pay, that is people having enough income only can purchase goods. In a centrally planned economy distribution is more equitable and it is through the public distribution system.

These fundamental economic problems can be better solved with the help of an economic tool namely production possibility curve.

1.4 Production Possibility Curve (PPC)

It is a curve which shows different combinations of the quantities of two goods that can be produced with a given amount of resources and with a given technology, when the resources are fully and efficiently utilised. In other words, trade-off between two commodities produced is shown. That is more of one commodity can be produced only by reducing the production of the other commodity. PPC is also called production possibility frontier or transformation curve.

A PPC for an economy is drawn on the basis of the following assumptions

1. Only two commodities are produced in an economy

2. Technology is given or constant
3. There is full employment of resources

Suppose the two commodities produced are food and weapons. In the figure food measured along the x-axis and weapons along Y-axis. When the entire resources utilised in the production of weapons the economy can produce OA amount of weapons. In the same way OB amount of food can be produced when the production of weapons is zero. Or different combinations like P, Q, R, S can be produced. When these combinations are joined we get the production possibility curve AB. The figure shows that to increase the production of food from F_1 to F_2 the production of weapons is to be reduced from W_1 to W_2 . This is the trade-off. The PPC is concave to the origin. It shows that marginal rate of transformation, that is the rate of sacrifice of one commodity in order to produce an extra unit of the other commodity goes on increasing.

If production is at a point inside the PPC say 'U', it shows that there is underutilisation of resources or inefficiency in the use of resources. Any point on the PPC say 'S' shows that the resources are fully utilised

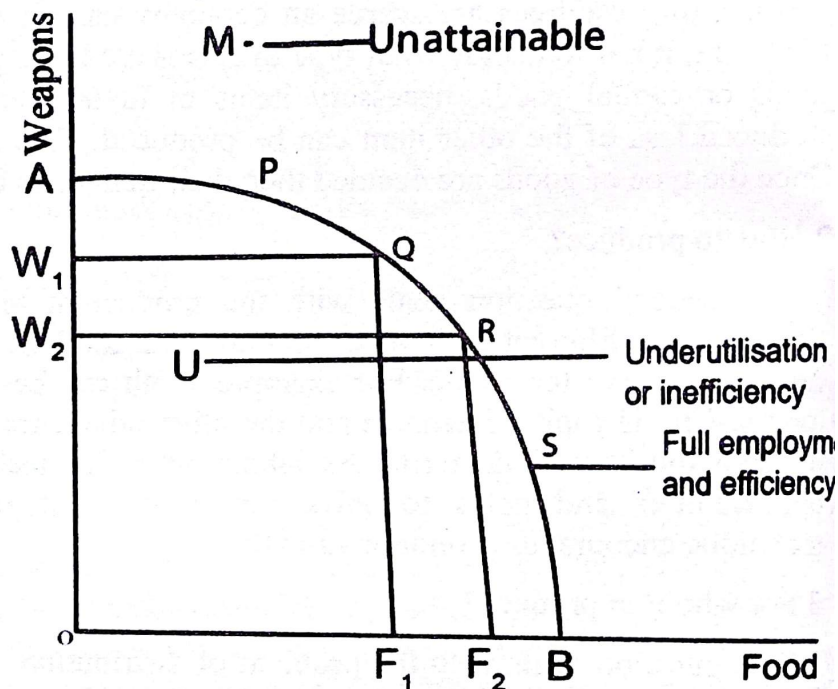


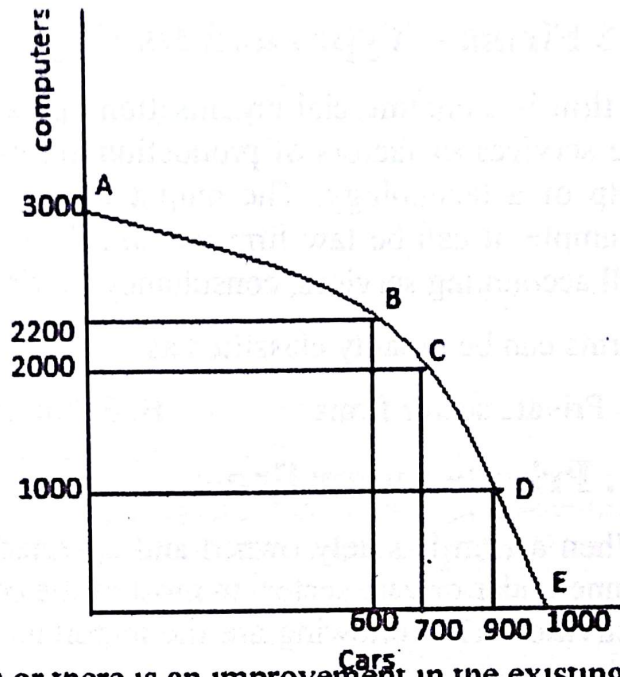
Fig 1.1 PPC

(full employment) and there is efficiency in the use of resources. The problem of choice is also addressed with PPC. The society can choose the best option from the available alternatives (represented by various points P, Q, R, S etc. on the PPC). A point above the PPC say 'M' is not attainable to the economy. This is due to the scarcity of resources. When production is on the PPC the basic economic problems are effectively addressed.

A numerical example can be used to explain the construction of the production possibility curve. Suppose a country produces cars and computers with its available resources. Different combinations of these two commodities that the country can produce is given in the following schedule

Basic Concepts

Combination	Number of Computers	Number of Cars
A	3000	0
B	2200	600
C	2000	700
D	1000	900
E	0	1000



When the above schedule is converted into a curve we get the PPC.

Shifting of the PPC

Suppose a society discover some new resources or there is an improvement in the existing technology, PPC will shift upward. This enables the economy to produce more of both the goods and it leads to economic growth. On the other hand when there is a natural calamity, resources will be destroyed and the PPC shifts down.

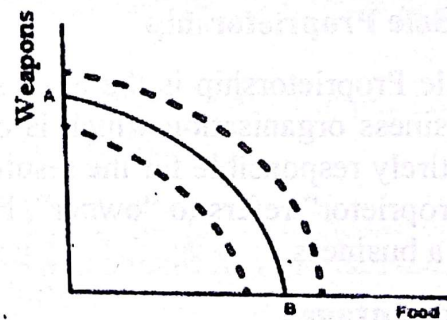


Fig 1.2 Shifting of PPC

1.5 Opportunity Cost

Opportunity cost is the value of the next best alternative foregone when the best one is chosen. In other words, opportunity cost represents an alternative given up when a decision is made. Suppose a farmer can cultivate either wheat or rice in his farm. If he decides to produce rice, the value of wheat given up is the opportunity cost of rice production. When a decision is made on the basis of opportunity cost, resource allocation becomes optimum and efficient. It is also used in determining relative prices of goods and remuneration of factors.

The concept of opportunity cost can be explained with the help of a PPC. In the figure opportunity cost of producing OW amount of weapons is FB amount of food. *Marginal opportunity cost is the amount of one commodity sacrificed to produce an extra unit of the other commodity.* The marginal opportunity cost of producing WW1 amount of weapons is FF1 of food.

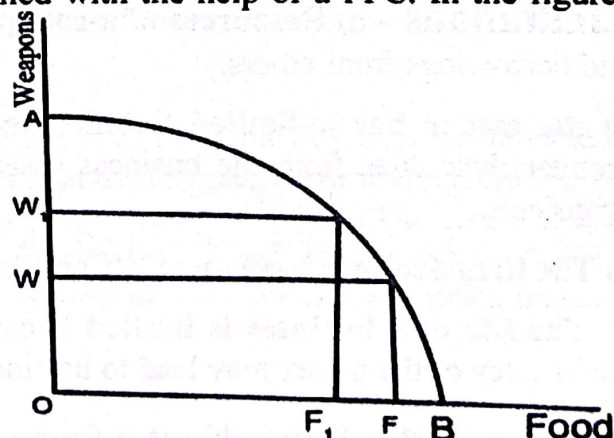


Fig 1.3 Opportunity Cost

1.6 Firms – Types and Its Objectives

A firm is a commercial organisation operating for profit. It is an entity that make use o the services of factors of production and produce output through a process and with the help of a technology. The output of a firm can be a product or service or both. For example, it can be law firm which sell services related to law or an organisation which sell accounting services, consultancy services etc.

Firms can be broadly classified as

A. Private sector firms B. Public sector firms and C. Joint sector firms

A. Private sector firms

When a firm is solely owned and operated by private individuals or institutions, it will come under private sector. In most of the economies private sector dominate the business activities. The following are the important type of business organisations coming under private sector:

i) Sole Proprietorship

Sole Proprietorship is the most suitable form for small businesses. It refers to a form of business organisation which is owned, managed and controlled by an individual who is entirely responsible for the results of the operations. The word “sole” implies “only”, and “proprietor” refers to “owner”. Hence, a sole proprietor is the one who is the only owner of a business.

Advantages

- a) **Easy to start or exit** as there are no legal formalities in starting a business.
- b) **Prompt and quick decision making** is possible as there is no need to consult others.
- c) Sole proprietorship enables the owner to keep all the information regarding the business **confidential and to maintain secrecy**.
- d) **No need to share the profit** and hence it will be an incentive to work hard.

Limitations - a) **Resources of a sole proprietor are limited** to his personal savings and borrowings from others.

b) **the owner has unlimited liability** because if the business fails, the creditors can recover their dues from the business assets as well as from the personal assets of the proprietor.

c) **The firm does not have an entity separate from the owner.**

d) **The life of a business is limited** because death, imprisonment, physical ailment or bankruptcy of the owner may lead to its closure

Partnership - Partnership is a form of business in which two or more individuals decide to start a common business. According to the Indian Partnership Act, 1932 a

Basic Concepts

partnership is “the relation between persons who have agreed to share the profit of the business carried on by all or any one of them acting for all.” The following are the important features of partnership firms.

- i) Liability:** The partners of a firm have unlimited liability. Personal assets may be used for repaying debts in case the business assets are insufficient.
- ii) Sharing of profit and loss:** In a partnership, partners share profit as well as loss in the business. In other words, they bear the risk as a team.
- iii) Continuity:** There is lack of continuity of business as the death, retirement or insolvency of any partner can bring an end to the business.
- iv) Number of Partners:** The minimum number of partners needed to start a partnership firm is two. According to the Companies Act 2013, maximum number of partners in a partnership firm can be 100, subject to the number prescribed by the government.

Merits

- i) Ease of formation and closure:** Formation of partnership is easy because there is no compulsion with respect to registration of the firm.
- ii) More funds:** In a partnership, the capital is contributed by a number of partners. This helps to raise larger amount of funds as compared to a sole proprietor.
- iii) Shared risk:** Risks in the business are shared by all the partners.
- iv) Secrecy:** Legally it is not needed to publish its accounts and submit its reports. Hence it is able to maintain confidentiality of information.

Limitations

- i) unlimited liability:** The partners of a firm have unlimited liability. Personal assets may be used for repaying debts in case the business assets are insufficient.
- ii) Limited resources:** There is a restriction on the number of partners and this restrict the capacity of the firm to raise funds.
- iii) Lack of continuity:** There is lack of continuity of business as the death, retirement or insolvency of any partner can bring an end to the business.

Joint Stock Company

A joint stock company is a business organisation that is owned jointly by all its shareholders. All the shareholders own a certain amount of stock in the company, which is represented by their shares. A joint stock company is established under Companies Act 1956. Its scope and functions are governed by Memorandum of Association signed among members. The company comes into existence only after the Registrar of Joint Stock Companies issues a certificate of incorporation.

The owner's capital in a joint stock company is invested in the form of shares. Therefore, owners are its shareholders. The profit earned by the company is distributed among shareholders in the form of dividends.

A joint stock company is known as a limited company because the liability of a shareholder is limited to the proportion of shares held. The creditors (lenders) of the company can raise their claim on assets of the company and not on the personal belongings of the shareholders. The overall governance of a company is in the hands of Board of Directors elected by the shareholders. A joint stock company is a legal entity and its existence is independent of its members.

[A company can be a private limited company or public limited company. In the case of a private limited company, the maximum number of shareholders will be 200 (minimum 2) and the shares of the company can be transferred only among the members. But in the case of a public limited company there is no limit on the maximum number of members but the minimum number is seven. There are no restrictions in the transferring of shares. Shares of public limited companies can be transferred to anyone.]

Features

1. **Independent Legal Entity:** It has a separate legal entity apart from its members. A company acts independently of its members.
2. **Limited Liability:** The liability of its shareholders is limited to the value of shares they have purchased. The creditors (lenders) of the company can raise their claim on assets of the company and not on the personal belongings of the shareholders.
3. **Common seal:** A company being an artificial person cannot put its signatures. The seal of the company is affixed on all important documents and contracts as a token of signature. The directors must witness the affixation of the seal.
4. **Transferability of Shares:** The shares of a company can be transferred by its members.
5. **Separation of Ownership and Management:** Even though shareholders are the owners, the companies are managed by the Board of Directors.
6. **Perpetual Existence:** The company has a permanent existence. The shareholders may come or may go but the company will go on forever.

Advantages

Basic Concepts

- 1. Limited Liability:** The liability of its shareholders is limited to the value of shares they have purchased. The creditors (lenders) of the company can raise their claim on assets of the company and not on the personal belonging of the shareholders.
- 2. Perpetual Existence:** The company has a permanent existence. The shareholders may come or may go but the company will go on forever.
- 3. Independent Legal Entity:** It has a separate legal entity apart from its members. A company acts independently of its members.
- 4. Large funds:** Unlike proprietorship and partnership the financial resources of a company are much larger. It can raise the required capital by selling shares.
- 5. Transferability of Shares:** The shares of a company can be transferred by its members.

Disadvantages

- 1. Complexity in formation:** An important disadvantage of a joint stock company is the complex and lengthy procedure for its formation. This can take up to several weeks and is a costly affair as well.
- 2. Conflict of interest:** A company has many stakeholders like the shareholders, the promoters, the board of directors, the employees etc. All these stakeholders look out for their benefit and it often leads to a conflict of interest.
- 3. Excessive government controls:** A company has to submit many statements and returns to the government. There are many inspections and formalities of submission of records, especially in the case of manufacturing companies.
- 4. Lack of secrecy:** Maintaining secrecy is the most difficult part in any Joint Stock Company. Every matter has to be discussed in the board of directors' meeting or in the annual general meeting of shareholders.
- 5. Delay in decisions:** In a Joint Stock Company, there would be many levels of hierarchy. Approval has to be obtained at different levels and different departments before a final decision can be taken.

Cooperative

A cooperative is a voluntary association of persons, who join together with the motive of welfare of the members. It is to be registered under the Cooperative Societies Act 1912. The capital of a cooperative society is raised from its members through issue of shares. Its dealings are confined to members only. Mainly there are two types of cooperative societies.

i) Consumer's cooperative societies: The consumer cooperative societies are formed to protect the interests of consumers. The society aims at eliminating middlemen to achieve economy in operations. It purchases goods in bulk directly from the wholesalers and distributes goods to the members, thereby eliminating the middlemen. Profits, if any, are distributed on the basis of either their capital contributions to the society or purchases made by individual members.

ii) Producer's cooperative societies: These societies are set up to protect the interests of small producers. The society aims to enhance the bargaining power of the small producers. It supplies raw materials, equipment and other inputs to the members and buys their output for sale. Profits among the members are generally distributed on the basis of their contributions to the total amount of goods produced or sold by the society.

Advantages

i) Equality in voting status: The principle of 'one man one vote' governs a cooperative society irrespective of the amount of capital contribution by a member.

ii) Limited liability: The liability of members of a cooperative society is limited to the extent of their capital contribution. The personal assets of the members are not being used to repay business debts.

iii) Stable existence: Death or bankruptcy of the members do not affect the continuity of a cooperative society.

iv) Economy in operations: The members generally offer voluntary services to the society. Elimination of middlemen also helps in reducing costs.

v) Ease of formation: The cooperative society can be started with a minimum of members. The registration procedure is simple involving a few legal formalities.

Limitations

i) Limited resources: Resources of a cooperative society consist of capital contribution of the members.

ii) Inefficiency in management: Cooperative societies are unable to employ expert managers because of their inability to pay them high salaries.

iii) Lack of secrecy: As a result of open discussions in the meetings of members, it is difficult to maintain secrecy about the operations of a cooperative society.

iv) Government control: Cooperative societies have to comply with several rules and regulations related to auditing of accounts, submission of accounts etc.

(v) Differences of opinion: Internal quarrels arising as a result of differences of opinion among the members may lead to difficulties in decision making.

B. PUBLIC SECTOR

Under public sector, government is the investor or owner of a business. Generally, public utilities like public roads, education, health, police, military etc. are provided by the government.

In India Public Sector Undertaking (PSU) is a term used to denote a government company. In such companies, government either own the entire shares of the company or majority of the shares (51 percent). Government starts public sector units for employment generation, balanced economic development and for the provision of products which the private sector does not want to produce.

Advantages

1. Balanced economic growth: In certain areas private sector may hesitate to invest because of long gestation period or because of less profit.

The government undertake such activities and it helps in the balanced economic growth.

2. Employment generation: By developing large industries, more employment opportunities are generated.

3. Profits for public welfare: Profit earned by the public sector units are utilised by the government for the benefit of the society.

Disadvantages - 1. Evils of bureaucracy: Public sector units suffer from the evils of bureaucracy such as corruption, delayed decision making etc.

2. Extravagance and inefficiency: Poor management leads to extravagance and overall inefficiency in the public sector units.

JOINT SECTOR - The Joint Sector is a kind of simple partnership between the private sector and the Government. These are industrial units in which both the public and private sector investment have been taking place. In such firms, ownership and control are effectively shared between public sector agencies on the one hand and a private group on the other. An important advantage of joint sector is that the resources of the two sectors can be combined. Hence it accelerates economic growth. Besides, Joint sector is a useful weapon to curb monopoly and concentration of economic power in the economy.

Based on the size of the investment industries can be classified as large- scale industries and small-scale industries.

Objectives of a Firm

In the initial stages of economic development sole proprietorship was the only form of business and the objective of a firm was profit. But later partnership and joint stock forms of business emerged and the objectives of the firms also changed. The following are the important objectives of firms put forward by scholars at different point of time.

Industrial Economics and Foreign Trade

- 1. Profit maximisation:** Conventionally profit maximisation is the most important objective of a firm. An individual takes risk and invests with the expectation of getting profit. Traditionally the efficiency of a firm is measured in terms of its profit and the long-term survival of a firm depends on the profit earned. However, the objective of profit maximisation has raised a few questions like which measure of profit – net profit, gross profit, net profit after tax – is to be taken into account and which time period – current year, previous year, next year – is to be considered etc.
- 2. Sales maximisation:** William Baumol put forward sales revenue maximisation as an important goal of a firm. According to him market leadership depends on sales volume. Further, he stressed that in large organisations management is separated from owners and the salary and other benefits of managers depend on sales volume. Hence, they try sales maximisation.
- 3. Maximisation of growth rate.** According to Marris, owners want maximum profit and managers aim at better salary and job security. These two sets of goals can be achieved by maximising the balanced growth of the firm. Balanced growth depends on the rate of growth of demand for the firm's output and the rate of growth of capital supply to the firm. When these two grow at the same rate, the rate of growth of the firm will be balanced.
- 4. Output Maximisation:** Milton Koford suggests output maximisation as the objective of a firm. According to him, "The performance of firms frequently is measured directly in terms of physical output with revenue occupying a secondary position." In other words, some minimum level of profits a firm will try to maximise its output.
- 5. Satisfaction Maximisation:** Scitovsky favours maximisation of satisfaction instead of the profit-maximisation objective of the firm. According to him an entrepreneur wants to maximise satisfaction and keep his efforts and output below the level of maximum profits. This is because as his income (profit) increases, he prefers leisure to effort (output).
- 6. Utility Maximisation:** Williamson has developed managerial utility-maximisation as an objective as against profit maximisation. In large modern firms, shareholders and managers are two separate groups and the managers have discretionary powers to set the goals of the firm. The shareholders always want to maximise profit. But the managers with their discretionary power try to maximise their own utility with the constraint of maintaining minimum profit to satisfy shareholders. The utility function of managers is dependent on their salary, job security, power, status, professional satisfaction etc.

1.7 Utility analysis

Utility is the want satisfying power of a commodity. In other words all commodities which satisfy a human want possess utility irrespective of the fact that it is useful or harmful. From consumers perspective utility can be defined as the satisfaction derived from the consumption of a commodity. Utility is a subjective concept.

Basic Concepts

There are two approaches in the measurement of utility. These are cardinal approach and ordinal approach. The cardinal approach believes that utility can be measured and expressed in terms of numbers. Some economists have suggested that utility can be measured in monetary units, by the amount of money the consumer is willing to sacrifice for another unit of a commodity. Others suggested the measurement of utility in subjective units called utils. But according to ordinal approach utility cannot be measured in terms of numbers because it is subjective. According to them commodities can be ranked or ordered according to the satisfaction derived from them. The main ordinal theories are the indifference-curve approach and revealed preference hypothesis.

Total utility(TU)

It is the total satisfaction derived from the consumption of different units of a commodity. Suppose a consumer consumes 'n' units of a commodity, his total utility from this n units equals

$TU_n = U_1 + U_2 + U_3 + \dots + U_n$ Where U_1, U_2 etc. are utility from the respective units.

Marginal Utility(MU)

It is the addition to total utility when a consumer consumes an additional unit of a commodity. In other words if a consumer consumes n units of a commodity then MU is the utility derived from the n^{th} unit. In simple words MU is the utility from the last unit consumed. Mathematically it can be written as

$$MU_n = TU_n - TU_{n-1} \quad \text{or in general } MU = \frac{\Delta TU}{\Delta Q} \quad \text{or} \quad \frac{dTU}{dQ}$$

Law of Diminishing Marginal Utility

The law states that as a consumer consumes more and more units of a commodity, the marginal utility goes on diminishing. In other words the extra utility received from consuming each additional unit diminishes. As the law was first explained by a German Economist Hermann Heinrich Gossen, it is known as Gossen's first law.

The law can be explained with the help of an example. Suppose a boy consumes more and more ice creams. The changes in his marginal utility and total utility are shown in the following schedule.

No. of ice creams Consumed	0	1	2	3	4	5	6	7
TU	0	10	18	24	28	30	30	28
MU	---	10	8	6	4	2	0	-2

It can be seen that as he consumes more and more ice creams TU increases but at diminishing rate. This is because MU is decreasing with each additional unit of consumption. That is the consumption of second ice cream will give less satisfaction as compared to the satisfaction from the first one. When consumption is 6 units MU is zero. This is the point of saturation. Further increase in consumption may cause discomfort to the consumer and hence total utility decreases. In other words MU becomes negative.

The changes in MU and TU can be understood with the help of this diagram.

In the diagram Consumption is measured along the X-axis and utility along the Y-axis. As consumption increases TU curve rises but MU curve comes down. When the MU curve touches the X-axis TU curve attain its maximum height. With further increase in consumption TU curve bends down because of negative MU.

Relation between MU and TU

1. When MU is positive, TU increases(but at a diminishing rate)
2. When $MU = 0$, TU is maximum
3. When MU is negative, TU decreases

Assumption of the Law

1. Different units of the commodity consumed are identical and in standard size. If a thirsty person takes water in a small spoon MU may not decrease.
2. There is no time gap between the consumption of different units. If a person takes an ice cream today and the second one after one week there will not be any change in his MU.
3. Consumer's income remains constant.
4. Consumers taste and preferences remain constant. A change in taste may increase MU with additional consumption.
5. Marginal utility of money remains constant.
6. Consumer is rational or he is a normal person who wants to maximise utility.
7. Commodity consumed is a normal one. It is not an intoxicant like alcohol.
8. Utility can be measured

Most of these assumptions are unrealistic and hence they are the limitations of the law of diminishing marginal utility. That is

1. Commodity consumed may not be in identical size
2. There will be time gap between the consumption of different units
3. Consumer's income may change
4. Consumers taste and preference may change

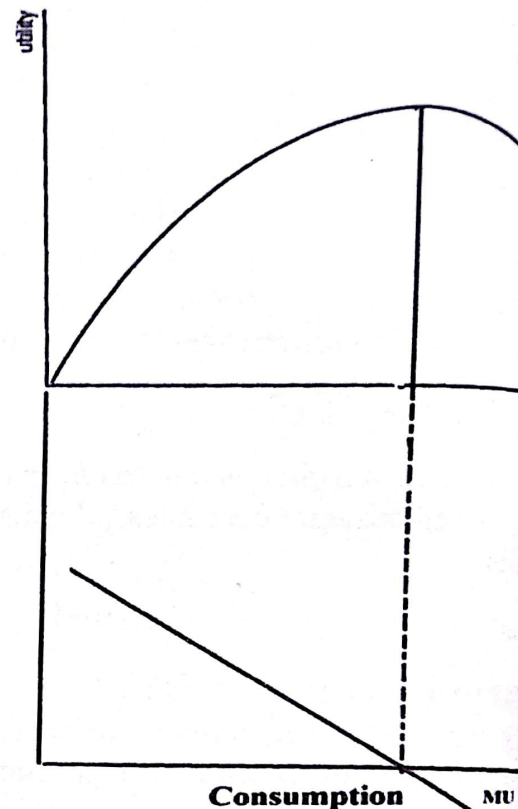


Fig 1.4 TU and MU

Basic Concepts

Just like any other commodity marginal utility of money also may change

The law is based on the assumption that utility can be measured. But utility is subjective and it cannot be measured.

Importance of the law

Basis of economic laws – The important laws of Economics are based on the Law of diminishing marginal utility. Law of demand, consumer's surplus etc. are examples.

Basis of the theory of taxation- The theory of progressive taxation is based on this law. As a person's income increases his marginal utility of money decreases. When he is taxed more his stock of money decreases and therefore marginal utility of money increases and equalises with other people. Thus inequality in the society can be reduced.

Geometrically, the marginal utility corresponding to each point on the total utility curve is given by the slope of the TU curve at that point. In other words MU is the rate of change of TU.

If the TU function is given MU function is derived by taking the derivative of TU function. For example, if $TU = 10.5x - 0.75x^2$ then $MU = 10.5 - 1.5x$, where x is the number of units consumed.

Consumer equilibrium

A consumer is said to be in equilibrium when he gets maximum satisfaction from his limited income. If we assume that a consumer is consuming only one commodity(x) and utility is measured in monetary units, the condition for consumer's equilibrium is

$$MU_x = P_x$$

If marginal utility of x is greater than price of x, the consumer can maximise his satisfaction by purchasing more units of x. He will buy more units until the above condition is satisfied.

If there are more commodities the condition is that the utility from the last rupee spend on each commodity is the same. That is

$$\frac{MU_x}{P_x} = \frac{MU_y}{P_y} = \dots = \frac{MU_n}{P_n}$$

This condition is subject to the constraint that

$$Q_x \cdot P_x + Q_y \cdot P_y + \dots + Q_n \cdot P_n = Y \quad (Y \text{ is the income of the consumer})$$

Note: Explanation given in boxes are not meant for examination.

Chapter 2

Demand and Supply Analysis

2.1 Demand Analysis

In the ordinary language people use the term demand as a want or need. But in economics its meaning is a little more. It is an effective desire. In other words demand is '*the backed by ability and willingness to pay for a commodity*'. That is the desire or need of a person to buy a commodity becomes demand only when that person has money to buy that product and he is ready to pay for that.

Types of demand

1. Direct demand

Goods which are used for final consumption have direct demand. Food, dress, TV, medicines etc. belongs to this category. These goods are demanded for its own use. Demand for these goods are also called autonomous demand.

2. Derived demand

Factors of production, raw material etc. have derived demand because their demand is derived from demand of the final goods produced with the help of these factors. For example demand for steel is derived from the demand of the products which are made of steel like automobiles, railway wagons etc. When demand for such products increases, demand for steel also increases.

3. Joint Demand

Goods which are used together have joint demand. Car and car tyres, bread and butter have this kind of demand. When demand for one product increases automatically demand for the other product also increases.

4. Individual demand and market demand

Individual demand means the quantity demanded by a single buyer or household. Market demand is the quantity demanded by all the buyers of a product. It is the aggregate demand of a product.

Demand for a commodity

Demand for a commodity is the quantity of that commodity a consumer is willing to purchase at a given price in a given period of time. That is, demand is always at a price and in a period of time. Period may be a day, a week, a month or year. Suppose a consumer purchases 2 kg of apple in a week when its price is Rs.200/kg, his demand for apple is 2 kg. This is individual demand for a commodity.

Law of demand

The Law of demand expresses the relation between price and quantity demanded. It states that '*other things remaining the same, price and quantity demanded of a commodity are inversely proportional*'. That is as price rises demand falls and vice versa.

Demand and Supply

ings include other factors determining demand like income of the consumer, price of related goods, taste and preferences of the consumer etc. The inverse relation between price and demand works only when these factors remain unchanged.

Thus demand is a negative function of price. A linear demand function can be written in the form $D_x = a - bP_x$, Where intercept 'a' shows the quantity demanded of x when price is zero, 'b' is the slope of the demand curve which shows the rate of change in demand when there is a unit change in price, P_x is the unit price of commodity x.

The law of demand can be explained with the help of demand schedule and demand curve.

Demand schedule

It is a table which shows different quantities of a commodity demanded at different prices. A hypothetical demand schedule is given below.

Price of X (in Rs.)	Demand for X(units)
5	10
4	20
3	30
2	40
1	50

The above demand schedule shows negative relation between price and demand. When price of X falls from Rs. 5 to Rs. 1 quantity demanded rises from 10 to 50 units.

Demand Curve

It is the graphical representation of a demand schedule. To draw a demand curve price is measured along the y-axis and quantity demanded along the x-axis. It is shown below.

In the figure DD is the demand curve which slopes downwards from left to right indicating the negative relation between price and quantity demanded.

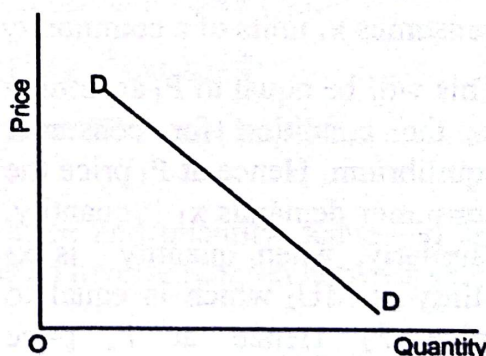


Fig 2.1 Demand Curve

Exceptions to law of demand

There are certain exceptions to the law of demand.

That is the negative relation between price and quantity demanded is not applicable to all types of goods.

1. Veblen goods - The term is named after the American economist Thorstein Veblen who introduced this phenomenon. **These are prestige goods or status symbol goods, their demand will be high only at higher prices.** For example diamond, if price of diamond is very low like Rs. 10 per diamond it has no attraction and therefore people may not buy. People think that the use of such items with high

price may give them high status in the society. This type of consumption is called conspicuous consumption.

2. Giffen goods – The term is named after the economist Robert Giffen who explained this category of goods. **Giffen goods are special type of inferior goods whose demand decreases with decrease in price and vice versa.** Suppose a family prefers potato to meat but because of their low income they purchase and consume more potato. When price of potato decreases, the money they can save because of the decrease in price will be used for buying more meat. Hence, now they buy less potato than before.
3. Speculative goods. When there is an upward trend in the price of shares people buy more shares on the expectation that the price will again increase and hence they can make a profit.

Why does the demand curve slope downwards or why do a consumer purchase a larger quantity at a lesser price? There are three possible reasons for this.

1. Income effect – When the price of a commodity falls the real income (quantity of goods and services that can be purchased with given income) of the consumer increases. Hence, he purchases more of the product.

2. Substitution effect – When a commodity becomes cheaper a consumer will substitute the cheaper good for other goods. Hence, its demand increases.

3. Law of diminishing marginal utility – A consumer will purchase a larger quantity of a commodity at a lesser price because the marginal utility of additional units purchased are less.

Marginal Utility and Consumer Demand

When marginal utility is measured in monetary units the demand curve for a commodity is identical to the positive segment of the marginal utility curve. Suppose a consumer consumes x_1 units of a commodity and his marginal utility is MU_1 .

This will be equal to P_1 according to the condition for consumer equilibrium. Hence at P_1 price the consumer demands x_1 quantity. Similarly, when quantity is x_2 utility is MU_2 which is equal to price P_2 . Hence at P_2 price consumer will buy x_2 and so on. This is shown in the diagram.

In the real world, a demand curve can be a straight line, a smooth curve, or any other irregular (usually negatively sloped) curve. But, for simplicity in this book a straight line demand curve is given.

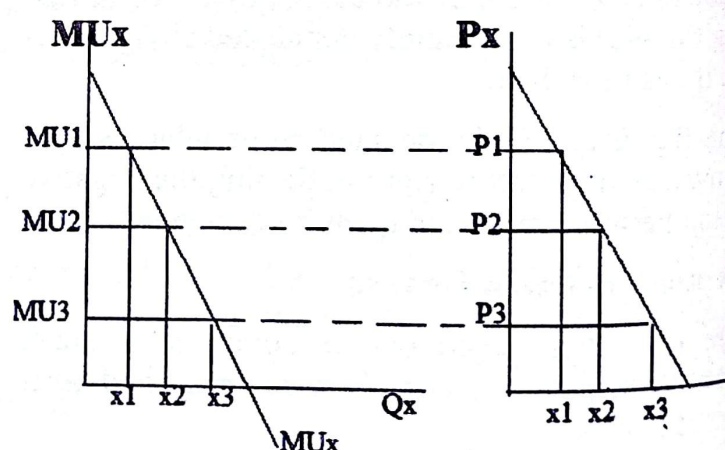


Fig 2.1.1 Derivation of demand curve

Demand and Supply

Market Demand curve - It is the total demand of a commodity in the market. In other words, *it is the sum of quantity demanded by all the buyers in the market.* Market demand curve is obtained by the horizontal summation of individual demand curves. The graphical derivation of market demand curve is shown below.

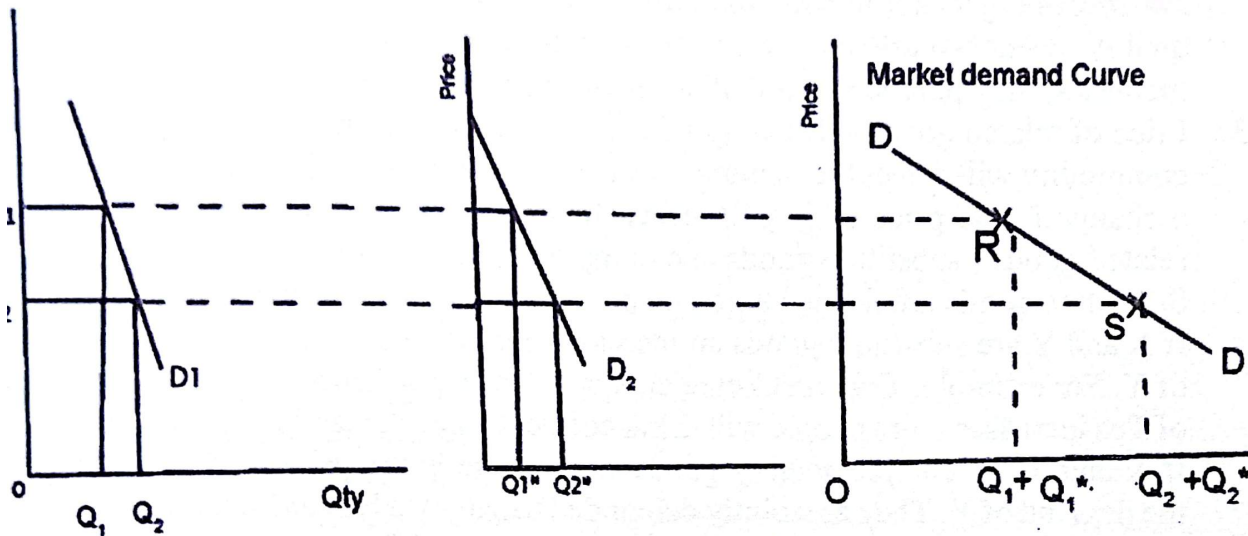


Figure 2.2 Market demand curve

For convenience it is assumed that there are only two buyers in the market, A and B. Demand curve D_1 in panel-A represents the demand curve of individual A and D_2 in panel-B represents demand curve of individual B. When price is P_1 quantity demanded by individual A is Q_1 and at the same price Q_2 is the quantity demanded by individual B. Market demand is $Q_1 + Q_1^*$. At the same price P_1 , quantity $Q_1 + Q_1^*$ is marked in panel-C and point R is obtained. Similarly point S is obtained by taking price P_2 and quantity $Q_2 + Q_2^*$. By joining the points R and S we get the market demand curve DD .

Determinants of demand or Factors affecting demand

There are many factors which affect the demand of a product. The most important ones are discussed below.

1. **Price of the product** – The relation between price and quantity demanded are already discussed under law of demand. There is an inverse relation between price and quantity demanded of a product. That is when price rises demand falls and vice versa. Demand curve and demand schedule establish this relation.
2. **Income of the consumer** – There is a positive relation between income and demand of a product. That is as consumer's income increases demand of the product also increases.

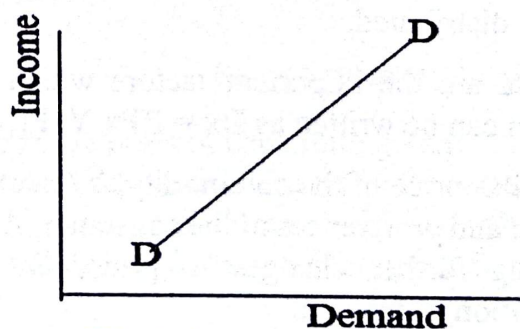


Fig.2.3 Income demand curve

Industrial Economics and Foreign Trade

This is the case of normal goods. Income demand curve or the Engel curve represent this relation. Income demand curve slopes upwards from left to right indicating the positive relation between income and demand.

But there are *certain type of goods their demand decreases with an increase in the income of consumers. This type of goods are called inferior goods*. Cheap quality products are examples of inferior goods. When consumer's income increases, they purchase more of superior quality products.

3. Price of related goods – If two goods are related then a change in the price of one commodity will affect the demand of the other commodity. If X and Y are related a change in the price of X will affect the demand of Y. There are two types of related goods - substitute goods and complementary goods.

Substitute goods are those where one product can be substituted for the other. If X and Y are substitute goods an increase in price of X will increase the demand of Y. For example, Tea and Coffee are considered as substitute goods. When price of Tea increases more people will drink coffee. Hence demand for coffee increases. If X and Y are complementary goods an increase in the price of X will decrease the demand of Y. They are jointly demanded to satisfy a human want. For example car and petrol, when price of petrol increases demand for cars decreases.

4. Taste and preferences of consumers – Changes in taste and preferences also affect demand of a product. If the change is favourable to a product its demand increases. For example, in dressing if a particular type of jeans is the current trend or fashion people will buy more quantity although there is no change in price.
5. Advertisement – Advertisement is an important factor which determines the demand of a product. Nowadays advertisement has an important role in consumer decisions. When advertisement expenditure increases demand of a product also increases.
6. Climatic conditions – If a change in climate is favourable to a product its demand will increase. For example, during rainy season demand for umbrellas will increase.
7. Expectations – If the consumer expects a further increase in the price of a product he will purchase a larger quantity today even at a higher price.
8. Population – This is an important factor which determines market demand of a product. When population increases the number of buyers also increases and hence the market demand increases.
9. Distribution of Income – Demand will be high in a society where income is equally distributed.

As these are the important factors which determine demand of a product the demand function can be written as $D_x = f(P_x, Y, P_r, T, A, E_x, C, N, D)$

Where P_x - price of the commodity, Y -income of the consumer, P_r - price of related goods, T - Taste and preferences of the consumer, A - Advertisement expenditure, E_x - Expectation regarding further changes in price, C - climatic conditions, N - population and D - Distribution of income.

Demand and Supply

Changes in Demand

Changes in demand can be in the form of a) Expansion and contraction of demand b) increase and decrease in demand.

Expansion and Contraction of demand
It is also called change in quantity demanded and it occurs due to a change in the price of a commodity. When price falls demand rises. This is expansion of demand. On the other hand, when price rises demand falls and this is called contraction of demand.

In the diagram when price decreases from P to P_1 demand rises from q to q_1 . This is due to expansion. Movement from q to q_2 is contraction. When price changes consumer moves upwards or downwards along the same demand curve. Therefore, it is also called movements along a demand curve.

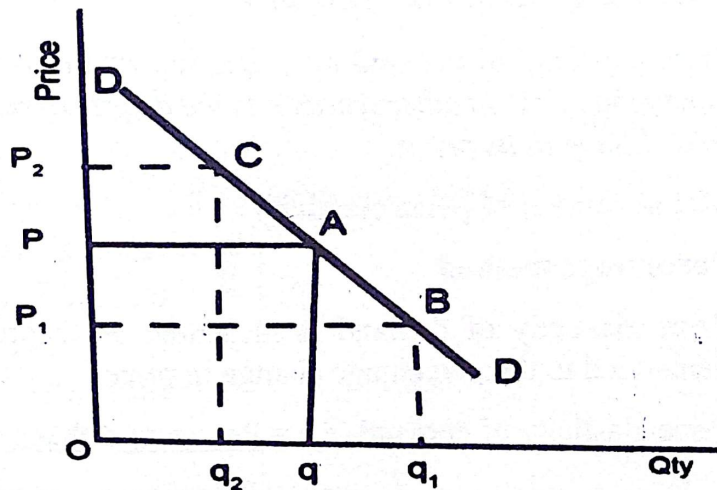


Fig. 2.4 Expansion and Contraction

Increase and decrease in demand

These are the changes in demand due to changes in factors determining demand other than price. For example, when income increases demand also increases and vice versa.

Increase in demand means at the same price a larger quantity is demanded and decrease in demand means at the same price lesser quantity is demanded. When demand increases demand curve shifts rightwards and when demand decreases demand curve shifts leftwards. Therefore, they are also called shifts in demand.

In the diagram the initial demand is q . When demand increases, at the same price op a larger quantity oq_1 is demanded and when demand decreases, at op price a low quantity oq_2 is demanded.

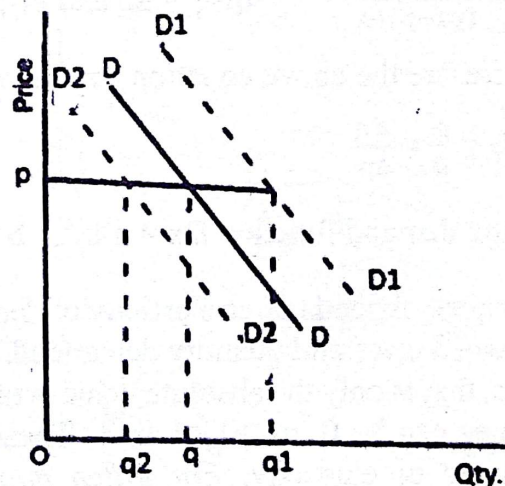


Fig. 2.5 Increase and decrease

Reasons for increase in demand

1. Increase in income of the consumer
2. Increase in the price of substitute goods
3. Decrease in the price of complementary goods
4. A favourable change in the taste of the consumer
5. Expectations of further increase in price
6. Increase in advertisement expenditure
7. A favourable change in climatic condition
8. Increase in population
9. A more equitable distribution of income

Elasticity of demand

Elasticity is the degree of responsiveness of demand of a product to a change in any of the factors which determine demand. As there are different factors which determine demand, there are different types of elasticity.

Price elasticity of demand

Price elasticity of demand measures the extent to which demand changes when there is a change in price. In other words it is the degree of responsiveness of demand of a commodity to a change in its price.

Measurement of price elasticity

Percentage method

Price elasticity of demand is measured as the ratio of percentage change in quantity demanded to the percentage change in price.

$$\text{Price elasticity of demand (e}_p\text{)} = \frac{\text{Percentage change in quantity demanded of X}}{\text{Percentage change in price of X}}$$

If p is the initial price and q the initial quantity and p_1 the changed price and q_1 the changed quantity, then

$$E_p = \frac{(q_1 - q)/q}{(p_1 - p)/p} \quad q_1 - q = \Delta q \text{ and } p_1 - p = \Delta p$$

Therefore the above equation can be written as

$$E_p = \frac{p}{q} * \frac{\Delta q}{\Delta p}$$

In the demand function $D_x = a - bP_x$, $b = \frac{\Delta q}{\Delta p}$

For normal goods price elasticity of demand will be negative because of the inverse relationship between price and quantity demanded. But the value is interpreted without considering sign, that is only the absolute value is taken. The values can be 0, ∞ , >1 , <1 or 1. These are the degrees of elasticity. For giffen goods price elasticity of demand is positive.

Degrees of price elasticity

1. Perfectly elastic demand.

It means that at the given price the demand of the product is infinite. In other words $e_p = \infty$. In this case demand curve will be a horizontal straight line parallel to x-axis. This is an imaginary situation.

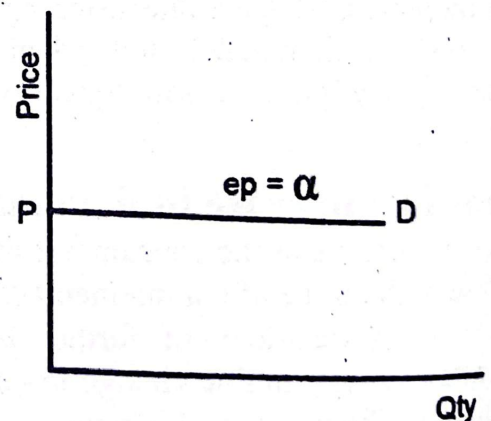
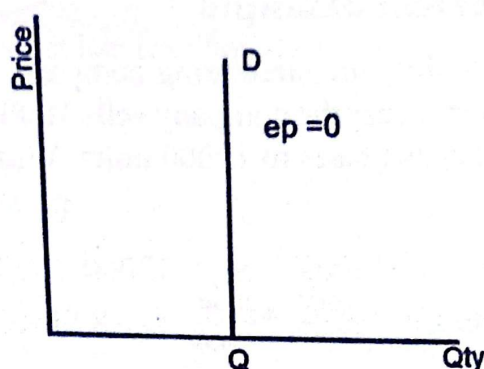


Fig. 2.6 Perfectly elastic demand Curve

Demand and Supply

2. Perfectly inelastic demand.

This is a situation in which quantity demanded remains constant irrespective of the changes in price. That is $e_p = 0$. The demand curve will be a vertical straight line parallel to the y-axis.



3. Unit elastic demand.

When the demand of a product is unit elastic a given proportionate change in price leads to an equal proportionate change in demand. That is a 10% change in price brings a 10% change in demand. Here $e_p = 1$ and the demand curve will be a rectangular hyperbola and the area $OPRQ = OP_1SQ_1$.

Fig 2.7. Perfectly in elastic demand Curve

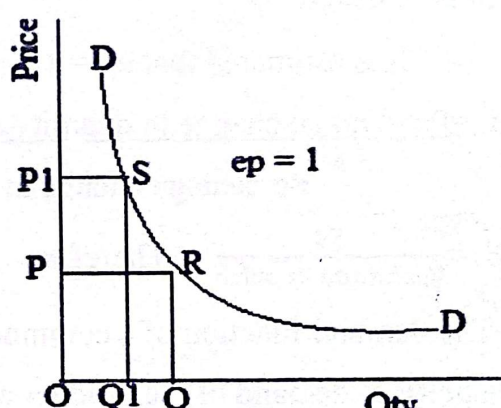
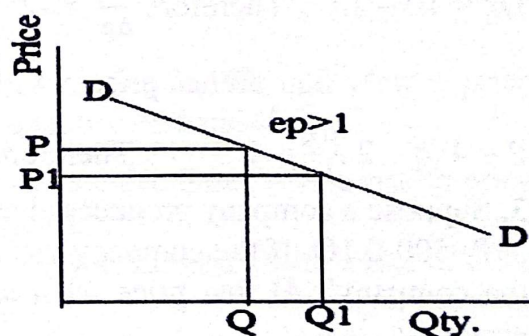


Fig.2.8 Unit elastic demand

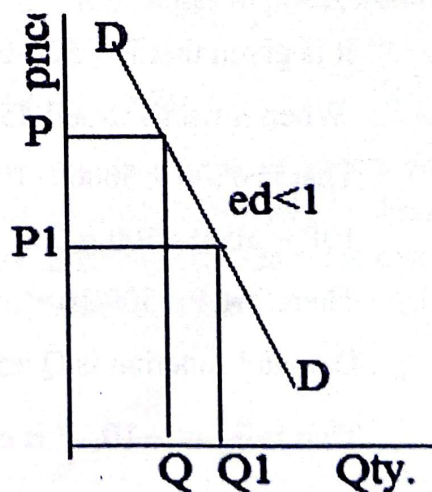
4. More elastic or elastic demand.

When a given proportionate change in price causes a greater proportionate change in quantity demanded it is the case of more elastic demand or $e_p > 1$. That is, because of a 10% change in price the change in demand will be more than 10%. In this case the demand curve will be flatter. In the figure $QQ_1 > PP_1$.



5. Less elastic or inelastic demand

This is the case where a given proportionate change in price leads to a lesser proportionate change in quantity demanded or $e_p < 1$. In this case the demand curve will be steeper. In the figure $QQ_1 < PP_1$.



Numerical example

1. (a) A mobile manufacturing company sells its mobile phones at a price of Rs. 4500 unit and in a year the company sells 10000 hand sets. When they decrease the price to 4000 sales increase to 12000 units. What is the price elasticity of demand for this mobile phone?

$$E_p = \frac{p}{q} * \frac{\Delta q}{\Delta p}$$

$$P=4500 \quad q=10000 \quad \Delta q = 12000-10000=2000 \quad \Delta p = 4000-4500=-500$$

$$\text{Therefore } E_p = \frac{4500}{10000} * \frac{2000}{-500} = -1.8 \text{ Since } |E_p| > 1 \text{ the product has more elastic demand}$$

1. (b) Suppose this company wants to increase its sales by 50%. To what percentage is the price to be reduced?

It is estimated that $|E_p| = 1.8$ Percentage increase in demand needed = 50

$$E_p = \frac{\text{Percentage change in quantity demanded}}{\text{Percentage change in price}}$$

$$1.8 = \frac{50}{\% \text{ change in price}} \quad \text{Therefore, } \% \text{ change in price} = 50/1.8 = 27.78$$

2. The demand function of a commodity is given as $D_x = 10 - 2P$. What is the elasticity of demand of the product when price of the product is Rs. 4/-

$$D_x = 10 - 2P \quad \text{Therefore } \frac{\Delta q}{\Delta p} = -2$$

$$\text{When price} = 4 \quad D_x = 10 - 2*4 = 2$$

$$P = 4, q = 2, \frac{\Delta q}{\Delta p} = -2 \quad \text{Therefore } |E_p| = \frac{4}{2} * 2 = 4$$

3. Suppose a company produces electric bulbs and its demand curve is given as $P = 500 - 0.1Q$. If the company wants to sell 4500 bulbs what price would be charged the company? At that price what will be the price elasticity of demand? Comment on elasticity.

$$\text{It is given that } P = 500 - 0.1Q \quad \text{Therefore } Q = 5000 - 10P$$

$$\text{When it wants to sell 4500 bulbs } Q = 4500$$

$$\text{That is } 4500 = 5000 - 10P,$$

$$10P = 5000 - 4500 = 500$$

$$\text{Therefore } P = 500/10 = 50$$

$$\text{Demand function is } Q = 5000 - 10P$$

$$\text{That is } \frac{\Delta q}{\Delta p} = -10, P \text{ is estimated as } 50 \text{ and } Q \text{ is given as } 4500$$

Demand and Supply

$$ep = \frac{50}{4500} * (-10) = -0.11$$

Since elasticity of demand is 0.11 the product has inelastic demand.

Geometric method

Under this method elasticity of demand at various points on a straight line demand curve (linear demand curve) is measured. To estimate elasticity, demand curve is extended to both the axis. The formula to measure elasticity at a point on the demand curve is

$$Ep = \frac{\text{Lower segment of the demand curve at that point}}{\text{Upper segment of the demand curve at that point}}$$

In the figure

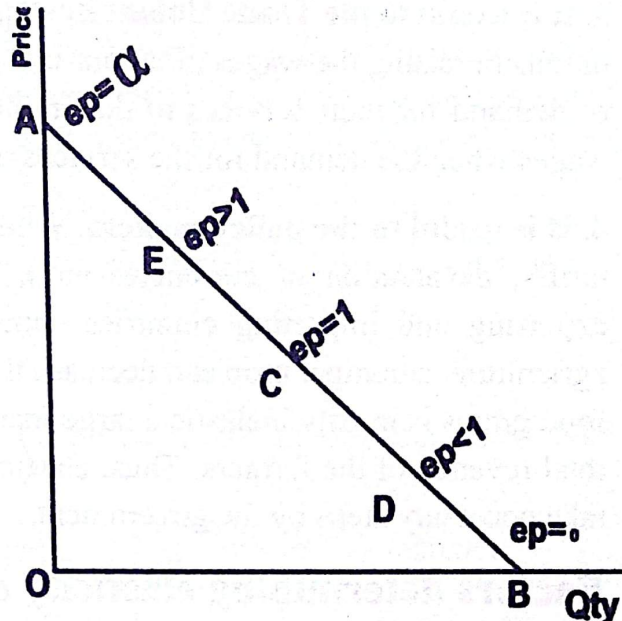
At point C (midpoint) $ep = \frac{BC}{AC} = 1$

At point B $ep = 0/AB = 0$,

At point A $ep = AB/0 = \infty$

A point between B and C (say D) $ep < 1$

A point between A and C (say E) $ep > 1$



Expenditure method

This method compares the total expenditure on a commodity before and after a price change. Total expenditure is the product of price and quantity demanded.

1. If total expenditure increases with a fall in price and decreases with a rise in price elasticity of demand will be greater than one ($ep > 1$).
2. If total expenditure decreases with a fall in price and increases with a rise in price elasticity of demand will be less than one ($ep < 1$).
3. If total expenditure remains the same irrespective of the changes in price, elasticity of demand will be equal to one ($ep = 1$).

Uses or applications of price elasticity of demand

1. It is useful to the government in fixing the tax on a product. If the government wants to increase its tax revenue, the tax of those commodities which are having inelastic demand should be increased. If demand is more elastic, an increase in tax will decrease the demand as well as expenditure on the commodity to a greater extent and this will decrease the tax revenue.

2. It is useful to the producers in fixing the price of a product. A producer can charge a higher price if demand of the product is less elastic. If demand is more elastic an increase in price will decrease the total revenue from the sale of the product.

3. It is useful to the Trade Unions in wage bargaining. The bargaining power of the trade unions in raising the wages of labour in a particular industry also depends on the elasticity of demand for their services to the employer. A trade union usually succeeds in raising wages when the demand for the services of labour to the employer is inelastic.

4. It is useful to the policy makers. While formulating export and import policies (like tariffs, devaluation of currencies etc.), elasticities of demand for the product in exporting and importing countries should be considered. Similarly, in the field of agriculture, a bumper crop can decrease the total revenue of the farmers. Since demand for food grains is mostly inelastic a large increase in output will decrease the price as well as the total revenue of the farmers. Thus, elasticity helps to understand this phenomenon and take necessary steps by the government.

Factors determining elasticity of demand

The following are the important factors which determine elasticity of demand.

1. **Nature of the commodity** – Generally, necessary items have inelastic demand because it has to be purchased even at a higher price or low income. On the other hand demand of luxury items will be elastic.
2. **Number of substitutes available for a commodity** – If a large number of substitutes are available for a commodity its demand will be more elastic.
3. **Number of uses of a commodity** – If a commodity has a large number of uses its demand will be more elastic.
4. **Proportion of income spent on a commodity** – The larger the proportion of income spent on a commodity more elastic will be its demand.
5. **Time period** – longer the time period more elastic will be the demand.

Cross elasticity of demand

It is the degree of responsiveness of demand of a commodity to a change in the price of a related good. In other words it is the degree of responsiveness of demand of commodity X due to a change in the price of Y.

$$\text{Cross elasticity of demand}(e_c) = \frac{\% \text{change in quantity demanded of X}}{\% \text{change in price of Y}} = \frac{P_y}{Q_x} * \frac{\Delta Q_x}{\Delta P_y}$$

Interpretation of cross elasticity of demand

1. If cross elasticity of demand between commodity X and Y is zero it means commodities are not related.

Demand and Supply

2. If cross elasticity of demand is positive it means that the two commodities are substitute goods
3. If cross elasticity of demand is negative, then the commodities will be complementary goods.

Numerical example

A consumer purchases 50 units of commodity X when its price is Rs.8/- per unit. In the next month he purchased 60 units at the same price. This was due to an increase in the price of another commodity Y from Rs.10 to 12. Calculate cross elasticity of demand and interpret the result.

$$P_y=10, Q_x=50, \Delta Q_x = 60 - 50 = 10, \Delta P_y = 12 - 10 = 2$$

$e_c=(10/50)*(10/2) = 1$ Since $e_c=1$ it is unit cross elastic demand. As the sign is positive X and Y are substitute goods.

Income elasticity of demand

It is the degree of responsiveness of demand of a commodity to a change in the income of the consumer.

$$\text{Income elasticity } (e_y) = \frac{\% \text{change in quantity demanded}}{\% \text{change in income}} = \frac{Y}{Q} * \frac{\Delta Q}{\Delta Y} \quad \text{where Y is income.}$$

For normal goods income elasticity will be positive because income and demand move in the same direction. But in the case of inferior goods income elasticity will be negative.

Numerical example

Suppose a consumer purchases 10 units of a commodity when his monthly income is Rs.20000. When his monthly income increases to Rs.25000 he purchases 12 units of it. Estimate income elasticity of demand and interpret the result.

$$Y = 20000, Q = 10, \Delta Y = 25000 - 20000 = 5000, \Delta Q = 12 - 10 = 2$$

$e_y = 20000 * 2 / 10 * 5000 = 0.8$. As e_y is 0.8 it is less income elastic demand. As the sign of income elasticity is positive, it is a normal good.

Promotional elasticity of demand

It is the degree of responsiveness of demand of a commodity to a change in the expenditure on sales promotional activities like advertisement.

$$\text{Promotional elasticity of demand} = \frac{\% \text{change in quantity demanded}}{\% \text{change in sales promotion expenditure}}$$

Usually promotional elasticity of demand is positive because as advertisement expenditure increases demand also increases.

2.2 Supply Analysis

Supply refers to the quantity offered for sale at a given price in a specified period of time. In other words it is the quantity of a commodity that a seller is willing to sell at a given price in a given period of time.

Factors determining supply

The following are the most important factors which affect supply of a product.

1. Price of the commodity – Price is the most important factor which determines supply of a commodity. A seller will be willing to sell a larger quantity only at a higher price. Therefore price and quantity supplied are directly proportional. That is when price rises supply of the commodity also rises and vice versa.
2. Price of factor inputs – When price of factor inputs increases the cost of production also increases. Hence it may affect profitability and therefore supply comes down.
3. Price of related goods – If X and Y are related goods for a producer he can produce either X or Y with his resources. It is his choice. When price of one commodity increases the supply of the other related commodity decreases because now it is less profitable to produce the commodity for which the price has increased.
4. Technology – When there is a technological improvement cost of production decreases and hence supply increases.
5. Government policies – If the government increases the tax on a product its supply decreases. On the other hand a subsidy may increase the supply of a product.

Supply function

Supply function shows the relationship between supply of a product and factors determining supply. It can be written as

$$S_x = f(P_x, P_f, P_r, T, G)$$

Where P_x is price of X, P_f is the price of factor inputs, P_r is price of related goods, T is technology and G government policies like tax and subsidy.

Law of Supply

The law expresses the relation between price and quantity supplied of a commodity. *The law states that other things remaining the same price and quantity supplied of a commodity are directly proportional.* That is when price of a commodity rises supply also rises and when price falls supply also falls. The assumption other things remaining the same means that other factors which determine supply remain constant.

Since price and supply are directly proportional a linear supply function can be written as $S_x = a + bP_x$ Where intercept 'a' represents supply when price is zero, b is the slope of the supply curve.

Supply schedule

It is a table which shows different quantities of a commodity supplied at different prices. An imaginary supply schedule is given below

Demand and Supply

Price of X Per unit	Qty. supplied (units)
1	10
2	20
3	30
4	40
5	50

It can be seen that as price increases from ₹1 to ₹5 quantity supplied increases from 10 to 50 units.

Supply curve

It slopes upwards from left to right indicating the positive relation between price and quantity supplied. In the figure SS is the supply curve.

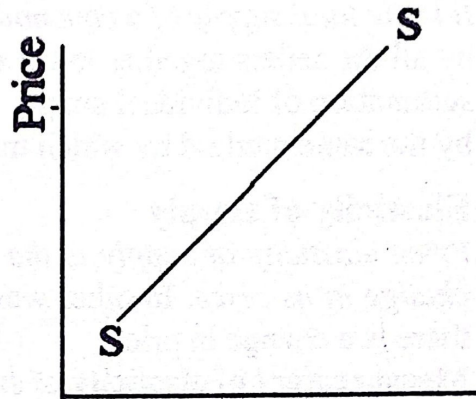
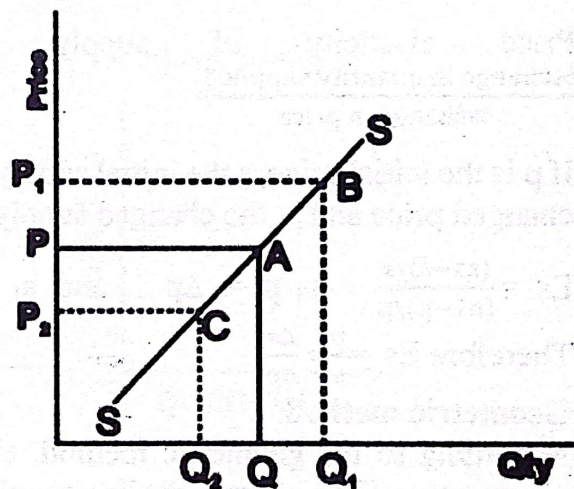


Fig. 2.12 supply curve

Expansion and contraction of supply

These are the changes in quantity supplied of a commodity due to a change in its price. When price rises supply also rises. This is called expansion of supply. When price falls supply also falls. This is called contraction of supply. In the figure movement from A to B is expansion of supply and movement from A to C is Contraction of supply.



Increase and Decrease in Supply

These are the changes in supply due to changes in factors affecting supply other than price. Increase in supply means at the same price larger quantity is supplied and decrease in supply means at the same price lesser quantity is supplied. When supply increases supply curve shifts rightwards and when supply decreases supply curve shifts leftwards.

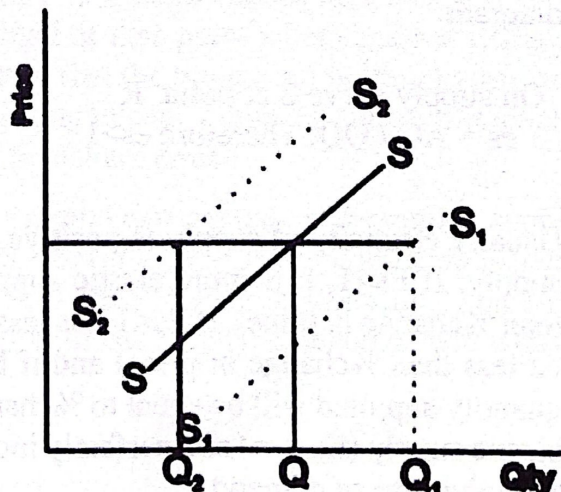


Fig. 2.14 Increase and decrease in supply

In the figure the new supply curve S_1S_1 shows increase(QQ1) in supply and decrease(QQ2) in supply.

Market Supply

It is the total supply of a commodity in the market. In other words it is the quantity supplied by all the sellers together in the market. Market supply curve is obtained by the horizontal summation of individual supply curves. A market supply curve can be derived graphically by the same method by which market demand curve is derived.

Elasticity of supply

Price elasticity of supply is the degree of responsiveness of supply of a commodity to a change in its price. In other words it measures the extent to which supply changes when there is a change in price.

Measurement of elasticity of supply

Percentage method

According to the percentage method elasticity of supply is the ratio of percentage change in quantity supplied to the percentage change in the price of the commodity.

$$\text{Price elasticity of supply (Es)} = \frac{\% \text{ change in quantity supplied}}{\% \text{ change in price}}$$

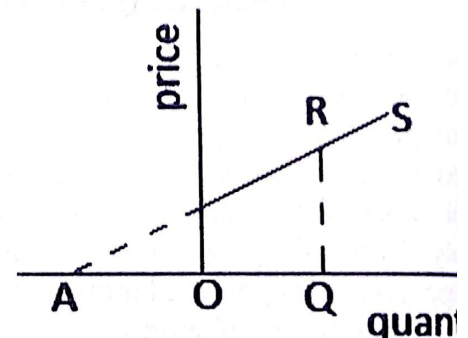
If p is the initial price, s the initial supply and p_1 the changed price and s_1 the changed supply

$$Es = \frac{(s_1 - s)/s}{(p_1 - p)/p} \quad p_1 - p = \Delta p \quad \text{and} \quad s_1 - s = \Delta s$$

$$\text{Therefore } Es = \frac{p}{s} * \frac{\Delta s}{\Delta p}$$

Geometric method

According to the geometric method, elasticity of supply at a point on a straight line supply curve is the ratio of supply curve intercept on the price axis to the quantity supplied at that point. This is explained with the help of the following diagram.

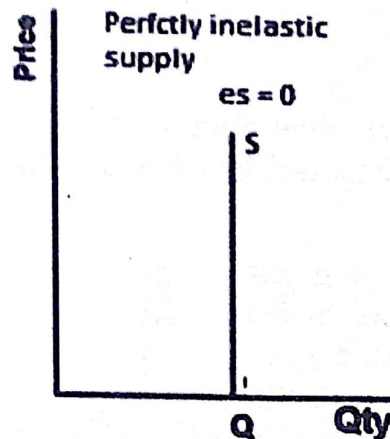
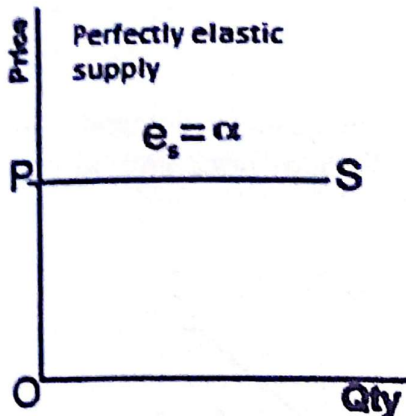


On supply curve S at point R
 $es = AQ / OQ$. Therefore $es > 1$

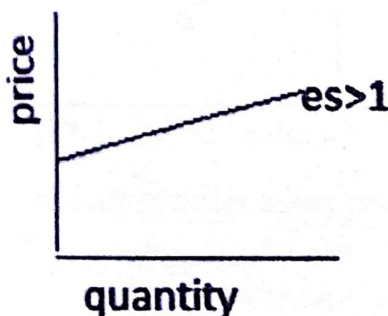
Usually elasticity of supply is positive because of the positive relation between price and supply. If $Es > 1$, it is more elastic supply (% change in quantity supplied will be greater than % change in price), if $Es < 1$ it is less elastic supply (% change in quantity supplied will be less than % change in price) and if $Es = 1$, then it is unit elastic supply (% change in quantity supplied will be equal to % change in price). Other two extreme cases are perfectly elastic supply ($Es = \infty$) and perfectly inelastic supply ($Es = 0$). These are the same situations as in the case of demand.

Demand and Supply

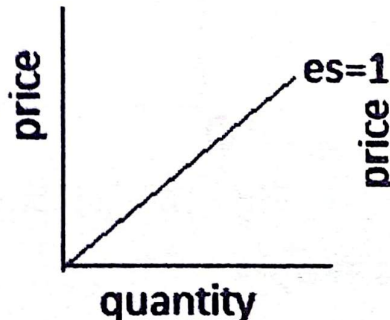
When supply is perfectly elastic, supply curve will be a horizontal straight line parallel to the x-axis and when supply is perfectly inelastic supply curve will be a vertical straight line parallel to the y-axis. Unlike in the case of demand, for all supply curves passes through y-axis elasticity of supply will be greater than one, for all supply curves passes through the origin elasticity of supply will be equal to one and for supply curves passes through x-axis elasticity of supply will be less than one.



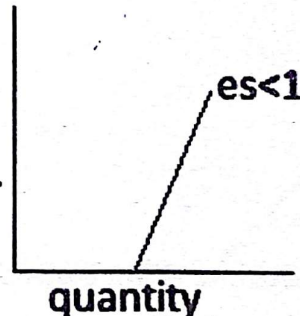
More elastic



Unit elastic



Less elastic



2.3 Equilibrium Price determination

Equilibrium price or market price of a commodity is determined by the interaction of market demand and market supply. It is determined at that point where market demand equals market supply. Market demand is the quantity that the buyers are willing to buy and market supply is the quantity that the sellers are willing to sell. At the equilibrium price the quantity that buyers want to buy and sellers want to sell are equal.

Equilibrium point is the point at which the market demand curve intersect the market supply curve. *The price at which market demand equals market supply is the equilibrium price* and the quantity demanded and supplied at this price is the equilibrium quantity. Equilibrium price determination can be explained with the help of a demand and supply schedule, and diagram.

Industrial Economics and Foreign Trade

Price of x per unit ₹	Quantity demanded (units)	Quantity supplied (units)
5	10	5
4	20	4
<u>3</u>	<u>30</u>	<u>3</u>
2	40	2
1	50	1

The above schedule shows that when price is ₹ 3 per unit the quantity demanded and supplied are equal and it is 30 units. Therefore 3 is the equilibrium price and 30 is the equilibrium quantity.

The following diagram explains equilibrium price determination. In the diagram at point E market demand curve DD intersects market supply curve SS. Therefore E is the equilibrium point, Op is the equilibrium price and OQ is the equilibrium quantity.

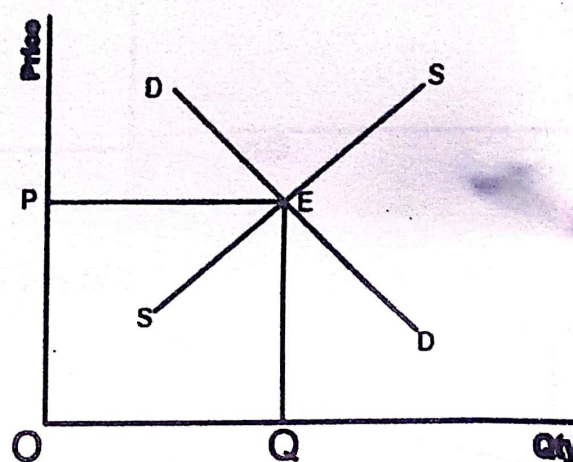


Fig 2.16 Equilibrium price determination

Excess demand and excess supply

Any temporary disturbance in the market will be automatically corrected and market will come back to the equilibrium position. Suppose price in the market increases above the equilibrium level. This creates excess supply in the market. In the figure op is the equilibrium price. If the price increases to op_1 the quantity demanded is only oq_1 but the quantity supplied is oq_2 . Here the excess supply is q_1q_2 . There will be unsold stock in the market and it compels the sellers to reduce the price to sell the excess supply. Thus price will come back to the initial equilibrium level op and quantity oq . On the other hand, if price decreases to op_2 there will be excess demand to the extent of q_3q_4 . Hence there will be a competition among the buyers to buy more. This pushes the price up and the price comes back to the original equilibrium level op .

Demand and Supply

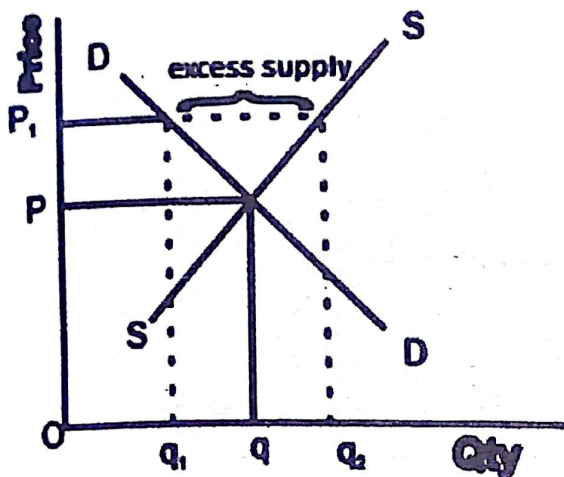


Fig. 2.17 Excess supply

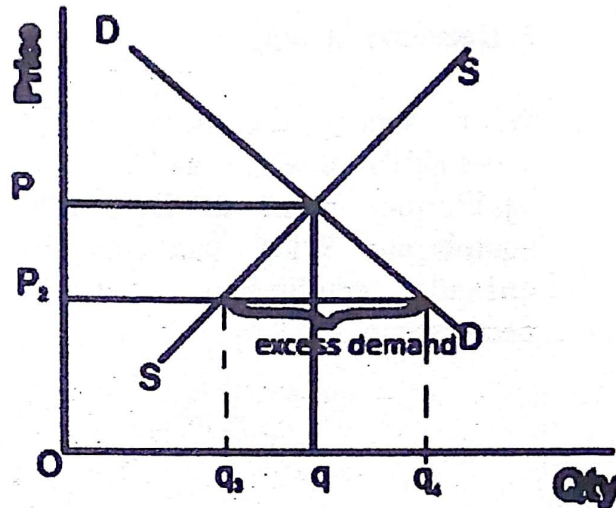


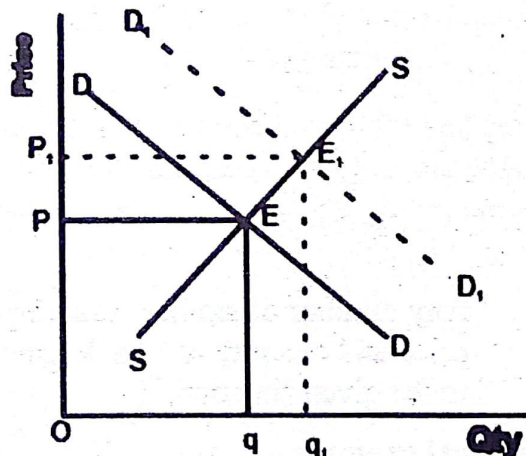
Fig. 2.18 Excess demand

Changes in demand and supply and its effects on equilibrium

When there is a change in demand or supply or both, equilibrium price as well as equilibrium quantity may change. Different situations can be explained.

1. Increase in demand

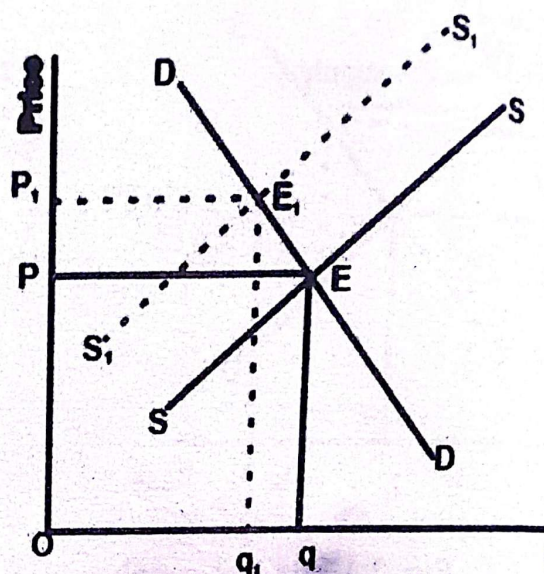
When demand increases the demand curve shifts rightwards. In the figure new equilibrium point is E_1 . Thus when demand increases equilibrium price as well as equilibrium quantity increases. The new equilibrium price is op_1 and quantity oq_1 .



Industrial Economics and Foreign Trade

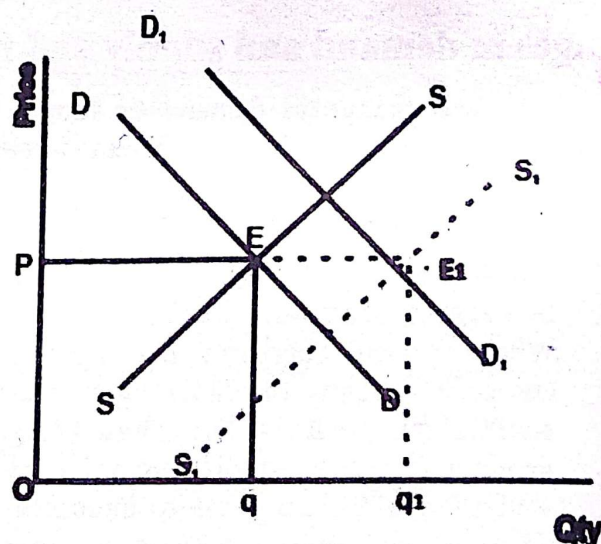
2. Decrease in supply

When supply decreases supply curve shifts leftwards, and the new equilibrium point is E_1 . Here equilibrium price increases to P_1 and equilibrium quantity decreases to q_1 .



3. Demand and supply increase equally

When there is an equal increase in demand and supply there will not be any change in equilibrium price but equilibrium quantity increases.



Any number of similar situations can be explained and the effect on equilibrium price and quantity can be determined with the help of a diagram drawn according to the given situation.

Numerical example

Demand function of a product is given as $D=50-2P$ and supply function $S=20+3P$. What will be the equilibrium price and quantity of the product? Find the excess demand of the product when price equals Rs. 3.

At the equilibrium point, Demand = supply

That is, $50-2P = 20+3P$ ie $5P = 30$

Therefore $P = 6$. Thus equilibrium price of the product is Rs. 6

To find equilibrium quantity substitute equilibrium price in any one of the equations.

Demand and Supply

When equilibrium price is substituted in demand function we get

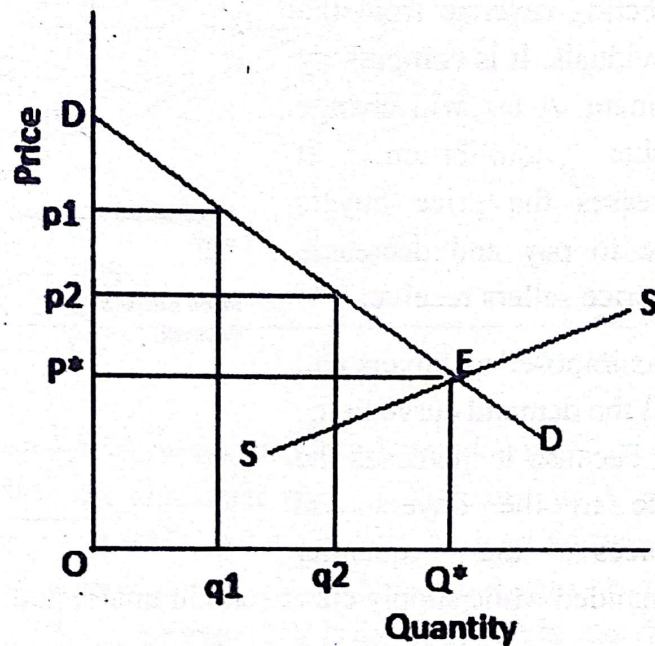
$$D = 50 - 2 \times 6 = 38 \quad \text{Thus equilibrium quantity is 38}$$

$$\text{When } p = 3 \quad D = 50 - 2 \times 3 = 44 \quad S = 20 + 3 \times 3 = 29$$

Therefore excess demand when p equals 3 is 15 (44-29)

2.4 Consumer surplus

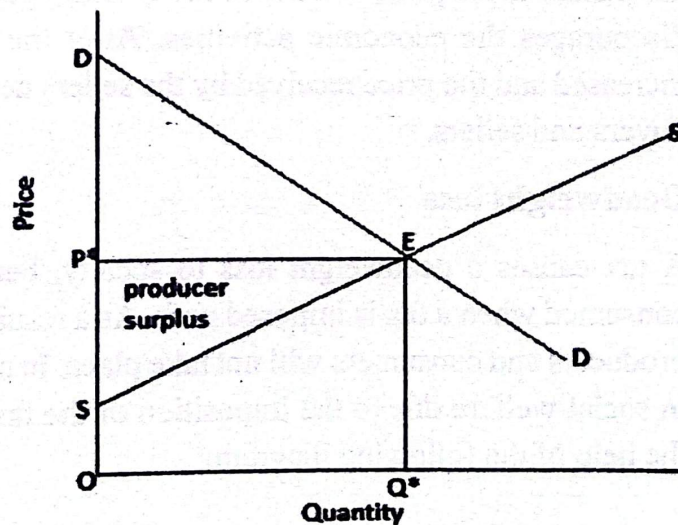
The difference between the price that consumers are willing to pay for a good and the price that they actually pay for a good is called **consumer surplus**. For example, suppose a person was ready to pay Rs.1500 for a shirt. But the actual price was Rs.1200 and hence he paid only this amount. Here the difference Rs.300 is the consumer surplus. The concept of consumer surplus can be explained with the help of the following diagram.



In the diagram, for the first unit q_1 , the consumer has a very high utility and hence he is ready to pay p_1 price. Similarly, for the second unit he is ready to pay p_2 . But the equilibrium or market price is only P^* and hence he pays the same price P^* for the entire quantity (Q^*) he purchases. Here, consumer is willing to pay an amount $ODEQ^*$. But the actual amount he has to pay is only OP^*EQ^* . The difference between these two, P^*DE is the consumer surplus.

Producer surplus

Producer surplus is the difference between price at which producers are willing to sell a good and the price they actually receive from consumers. Therefore, it is the difference between the supply curve and the market price. Producer surplus is a measure of producer welfare.



In the diagram the seller is ready to sell the equilibrium quantity Q^* for an amount c to $OSEQ^*$ but he actually gets OP^*EQ^* . The difference P^*ES is the producer surplus.

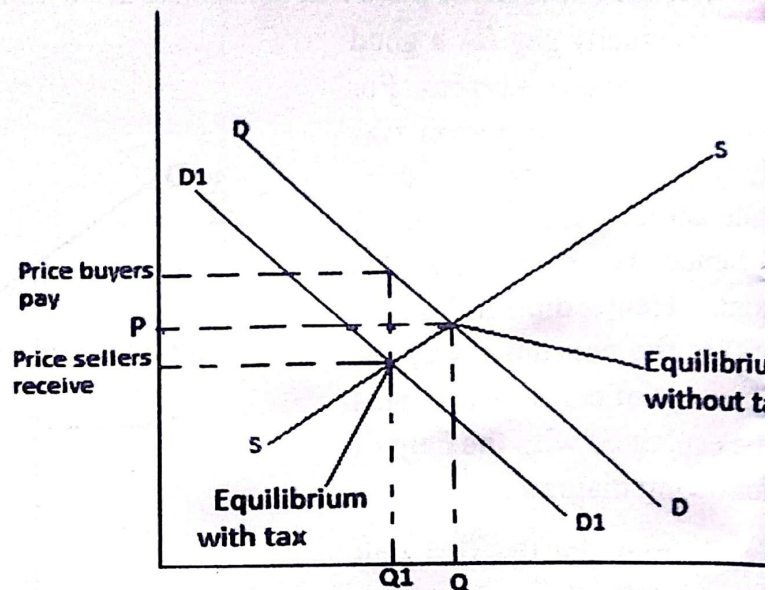
The sum of consumer surplus and producer surplus is the social surplus. In the diagram it is represented by the area DES where DEP^* is the consumer surplus.

Taxation and Deadweight loss

Taxation is a system of collecting revenue from the individuals. It is compulsory payment. A tax will change market equilibrium. It increases the price buyers have to pay and decreases the price sellers receive.

A tax imposed on buyers will shift the demand curve to the left because it increases the price to the buyers and reduces the quantity

demanded while supply curve remain unaffected. This is shown in the diagram.



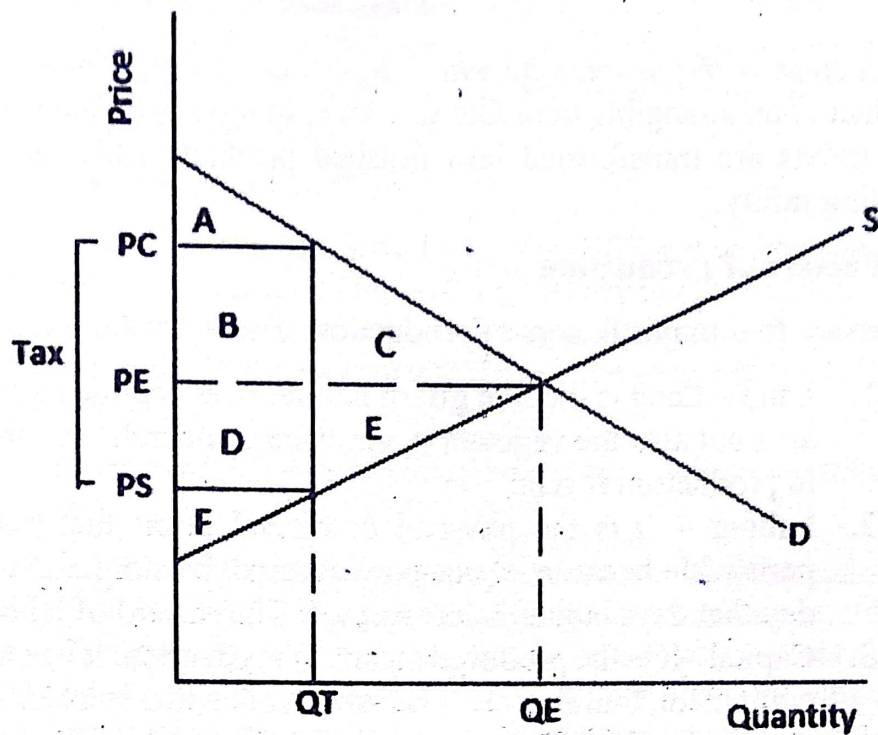
Initially, the equilibrium price is ' P ' and quantity is ' Q '. When a tax is imposed the demand curve shifts downwards to the extent of tax. The new demand curve is $D1D1$. Increase in tax increases the price and hence the quantity purchased by the consumers decreases. This discourages the economic activities. After the imposition of tax price paid by buyers is increased and the price received by the sellers decreased. Thus, the tax burden is shared by buyers and sellers.

Deadweight loss

A tax causes a deadweight loss to society, because less of a product is produced and consumed when a tax is imposed on it. As a result, some mutually beneficial trade between producers and consumers will not take place. In short, deadweight loss due to tax is the loss in social welfare due to the imposition of the tax. Deadweight loss can be explained with the help of the following diagram.

Demand and Supply

In the absence of tax market is in equilibrium when PE is the price and QE is the quantity traded in the market. In this situation consumer surplus is equal to A+B+C and the producer surplus equal to D+E+F. Here the social surplus (total surplus) equals A+B+C+D+E+F. When the tax is imposed, the price that the consumers have to pay increases to



PC. Therefore, the quantity traded in the market decreases to QT and the price received by the sellers decreases to PS. Because of the tax consumer surplus decreases to A and producer surplus decreases to F. Tax revenue is B+D. After the tax, the total surplus is A+B+D+F. There is a loss in the social surplus equivalent to C+E which is not appropriated by the government, consumers or producers. Thus, the area C+E is the deadweight loss due to tax.

CHAPTER 3

PRODUCTION

Production is the process by which inputs are transformed into output. Output product or an intangible item like a service. In other words it is the creation of utility. Raw inputs are transformed into finished products which satisfy human wants creating utility.

3.1 Factors of Production

There are four major factors of production. These are the primary factors.

1. Land – Land is the free gift of nature. In economics it includes not only the area but also the vegetation, air, water, minerals etc. around it. The reward in production is rent.
2. Labour – It is the physical or mental effort that put in production. It is perishable because labour power cannot be stored. If a worker is not working that day that day's labour is lost forever. The reward of labour is wages.
3. Capital – It is the produced means of production. It can be in the form of machinery, equipment, building etc. The reward of capital is interest. Modern economists also speak about human capital. It is the stock of knowledge, skill, experience used in production. It can be increased by education and training.
4. Entrepreneurship – Entrepreneur is the person who combines the service factors and organises production. Production involves risk and this risk is borne by the entrepreneur. Therefore the reward of entrepreneurship is profit.

3.2 Production function

In simple words, production function refers to the functional relationship between inputs and output. According to Koutsoyiannis "The production function is purely a relation which connects factor inputs and output."

In its general form a production function can be written as

$$Q = f(L, K, N, T)$$

Where L – labour, K – capital, N – natural resources including land, T – technology

Thus output is a function of these four factors.

Short run production function or variable proportion

In the short run output can be increased by increasing the quantities of the variable factors in production. Further, in the short run certain factors like machinery, building etc. are considered as fixed. Their quantities cannot be changed in the short period. On the other hand labour, raw material etc. are considered as variable. In the short run production can be increased by increasing the quantities of these variable factors.

Production

Thus in the short run quantities of fixed factors remains constant and the quantities of variable factors are increased to increase the output. Here the factor proportion, that is the proportion in which the variable and fixed factors are combined changes and hence the short run production function is called variable proportion.

Long run production function or fixed proportion

In the long run all factors are variable. It is the period which is sufficient to increase the quantities of all the factors. Hence output can be increased by increasing the quantities of all the factors in the same proportion. When all the inputs are increased or decreased in the same proportion, the factor proportion remains constant. Hence the long run production function is also called fixed proportion.

3.3 Law of variable proportion or returns to a factor or production function with one variable input

Law of variable proportion describes the changes in output when more and more units of one variable factor is employed while keeping the quantities of other factors constant. Since the law analyses the changes in output when there is a change in the quantities of only one variable input it is also called returns(output) to a factor or production function with one variable input. This happens in the short run and hence it is short run production function. To explain the law we must be familiar with the following concepts.

Total Product of a factor(TP)- *It is the total physical output produced by employing a certain quantity of that factor.* For example total product of labour means that when a certain amount of labour is combined with fixed quantities of other factors, the total output produced is the total product of labour. Suppose labour and capital are the two factors employed then total product function of labour can be written as

$$TP_L = f(\bar{K}, L)$$

Marginal product of a factor(MP) – *It is the addition to total product by employing one more unit of that factor.* For example marginal product of labour means addition to TP when one more labour is employed. That is

$$MP_L = \frac{\Delta TP}{\Delta L} \text{ or } \frac{dTP}{dL}$$

Average product of a factor(AP)-*It is the output per unit of that factor employed.* It is obtained by dividing the TP by the number of units of that factor employed. For example AP of labour can be written as

$$AP_L = \frac{TP}{L}$$

The law states that when more and more units of one variable factor is employed with fixed quantities of other factors, initially MP increases, then it decreases and finally it becomes negative. In other words initially the total product increases at an increasing rate, then TP increases at a decreasing rate and finally it starts declining. It is similar to the law of diminishing returns. It states that with increase in the quantity of one variable factor its marginal and average product eventually declines. The law is based on the following assumptions.

Industrial Economics and Foreign Trade

1. All units of the variable factor employed are equally efficient.
2. Technology remains constant
3. The proportion of inputs can be varied

The law can be explained with a schedule. Suppose a farmer has a fixed area of land and land is considered as the fixed factor. Labour is the variable factor and the farmer employs more and more units of labour. The changes in TP, MP and AP are given in the following schedule.

No. of units of Labour	Total Product	Marginal Product	Average Product	
1	8	8	8	
2	18	10	9	
3	30	12	10	Increasing return
4	40	10	10	
5	45	5	9	
6	48	3	8	
7	49	1	7	
8	49	0	6.1	Diminishing return
9	45	-4	5	
10	40	-5	4	Negative returns

The law of variable proportion can also be explained with the help of the following diagram.

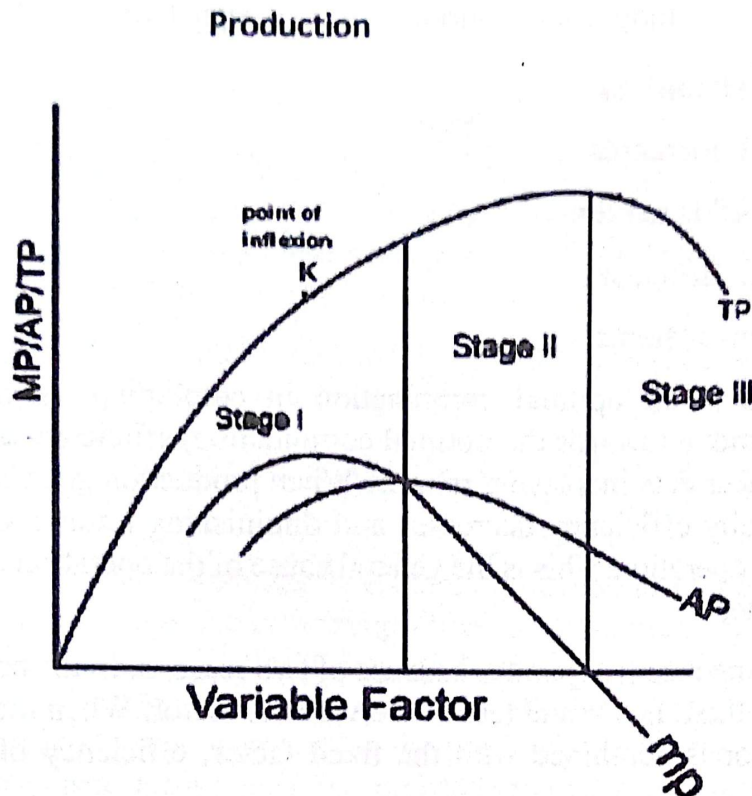


Fig. 3.1 The Law of variable proportion.

The schedule and diagram shows three stages while the law operates.

Stage 1: This is the stage of increasing returns. During this stage while MP increases, TP increases at an increasing rate. In the schedule till the employment of the 3rd labour MP is increasing. In the diagram till the point K, that is the point of inflexion, this situation prevails. First stage continues till $MP=AP$. During this stage AP is also increasing.

Stage 2 : This is the stage of diminishing returns. During this stage MP decreases and hence TP increases at a diminishing rate. This can be seen in the schedule. With each addition of labour MP decreases and this continues till the employment of the 8th labour where MP becomes zero. Thus the second stage ends when $MP=0$. This can also be seen in the diagram where in the second stage MP curve is sloping down. When MP touches the X-axis ($MP=0$) TP curve has its highest point. In other words When $MP=0$, TP is the maximum.

Stage 3 : This is the stage of negative returns where MP becomes negative and TP starts declining. In the schedule the employment of the 9th labour mark the beginning of the third stage. From this point onwards TP declines and the TP curve comes down. The MP curve goes below the X-axis.

Relation between MP and TP

- 1 When MP increases TP increases at an increasing rate
2. When MP decreases but remains positive TP increases at a decreasing rate
3. When MP becomes negative TP declines

Relation between MP and AP

1. When $MP > AP$, AP increases
2. When $MP = AP$, AP is maximum
3. When $MP < AP$, AP decreases

Reasons for different returns

In production there is an optimal combination in combining various inputs. As the production process moves towards the optimal combination, efficiency of factors increases and hence the producer gets increasing returns. When production goes beyond the optimal combination, gradually efficiency decreases and diminishing returns as well as negative returns will come in operation. This is the general cause of the operation of different returns while the law operates.

Specifically increasing returns operates because of two reasons. In the beginning there will be large quantity of fixed factor and less of the variable factor. When more and more of the variable factor is combined with the fixed factor, efficiency of the fixed factor increases.

Another reason is that, when the number of units of the variable factor increases, there is the possibility for division of labour and specialisation. Each worker can specialise in a particular task and this increases his efficiency and productivity. This gives increasing returns.

Once production attains maximum efficiency with optimal combination of inputs, further increase in the variable factor will add less to the total product. In other words, marginal product starts declining or there will be diminishing returns. The main reason for diminishing returns is that factors are not perfect substitutes. That is, increase in one variable factor alone cannot compensate for the other factors.

Negative returns or negative marginal product is the result of the employment of variable factor to a meaningless extent that results in the decrease of total product. The stage of negative returns can also be viewed as a stage of increasing cost. The employment of the variable factor incurs additional cost without any additional benefit.

In which stage a producer will produce?

A sensible producer will not produce in the first stage or in the third stage. In the first stage, since marginal product of the variable factor is increasing, it will be profitable for the producer to employ more of that factor. The third stage is not at all feasible as it is the stage of negative returns. Therefore, a producer will produce somewhere in the second stage. He can employ more and more units of the variable factor till the marginal benefit from an additional unit of that factor equals the additional cost incurred.

Significance of the law

The law has universal applicability. It can be applied to the fields of agriculture, fishing, mining etc. and even to industries. In an industry in the short period machinery building etc. are fixed. Suppose 100 labours are required to work with a machine employing more than 100 workers may result in diminishing returns.

But the law can be earnestly applied in the field of agriculture especially in the developing countries where there is population pressure and agriculture is overwhelmed with labour.

3.4 Returns to scale or Fixed proportion or Long-run production function

In the long run all the factors are variable. Therefore output can be increased by increasing the quantities of all the factors in the same proportion. Since in the long run all the factors are increased in the same proportion to increase the output, factor proportion remains the same and hence the long run production function is also called fixed proportion. When all the inputs are increased in the same proportion the production capacity as well as the scale of production also increases. Hence the long run production function is also called returns to scale.

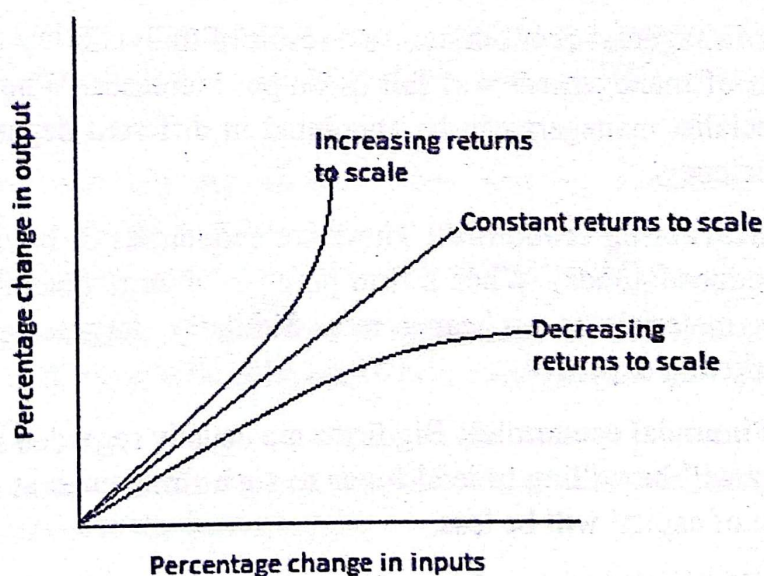
Thus, *the long run production function describes the changes in output when all the inputs are varied at the same proportion.* When all the inputs are varied at the same proportion, initially the producer gets increasing returns to scale, then constant returns to scale and finally decreasing returns to scale.

Increasing returns to scale means that output increases at a greater proportion than the increase in inputs. That is when there is a 10% increase in inputs output increases more than 10%. When there is constant returns to scale output increases at the same proportion of the increase in inputs. A 10% increase inputs leads to a 10% increase in output.

Decreasing returns to scale means output increases at a lesser proportion.

The long run production function is also based on the following assumptions.

1. All units of the inputs used are homogeneous
2. Technology remains constant.



Increasing and decreasing returns to scale operate mainly because of the operating economies of scale and diseconomies of scale.

Economies of Scale

Economies of scale mean advantages of largescale production which help in reducing average cost of production. The economies of scale can be broadly classified as i) Internal economies ii) External economies

Internal Economies

Internal economies depend on the size of the firm. These advantages emerge within the firm itself as its scale of production increases. Internal economies are entirely enjoyed by the firm itself. There are different forms of internal economies.

1. Labour economies: Increased production allows division of labour and it increases efficiency and productivity of workers. Further large firms can attract more efficient labour because of the better prospects it can offer to the workers.

2. Technical economies: As a firm expands it can use the latest technology and machinery. This increases efficiency and reduces cost of production. Similarly, the firm can enjoy economies of linked process. That is production activities can be arranged in a continuous process without any loss of time.

3. Managerial economies: As a result of indivisibility of managerial factors, the cost per unit of management will fall as output increases. When there is large scale production, specialist managers can be appointed in different departments and this increases overall efficiency.

4. Marketing economies: These are economies of buying (of raw materials) and selling (produced goods). When a firm purchases a large quantity of raw materials, it can get raw materials at a cheaper rate. Similarly, largescale marketing will reduce average marketing expenses.

5. Financial economies: Big firms are usually regarded as less risky by investors and lenders; they will be willing to lend funds to such firms even at a lower rate of interest. Thus the cost of capital will be less.

6. Risk minimising economies: When there is largescale production, risk can be minimised by diversification of output, diversification of markets etc.

External Economies

External economies mean gains available to all the firms in an industry from the growth of that industry. That is advantages accruing to a firm due to localisation of the industry. The following are the important types of external economies.

Production

- 1. Economies of localisation:** When number of firms in the industry are located in one place, all of them derive mutual advantages. This can be in the form of availability of skilled labour, provision of better transport facilities etc.
- 2. Economies of Information:** In an industry, research work can be done jointly. Statistical, technical, and other market information becomes more readily available when a large number of firms are located at one place.
- 3. Economies of Vertical Disintegration:** Localisation of an industry may lead to the establishment of new subsidiary industry in the area to fulfil the needs of the main industry. For example, in the area of textile industry a chemical firm may start a colour manufacturing unit.
- 4. Economies of by-product:** The availability of waste material in large quantity from the industry may facilitate the starting up of firms in the area which produce by-products by using this waste materials.

Diseconomies of Scale

Diseconomies of scale means disadvantages of large production. Beyond a certain limit, diseconomies surpass internal and external economies. These diseconomies increase the average cost of production and limit the further expansion of the firm. The following are the important types of diseconomies.

- 1. Difficulties of management:** As a firm expands problems of management arises. Beyond a limit, it will be very difficult for the manager to control the organisation. Supervision becomes complex and it leads to mismanagement and wastage. This increases the average cost of production.
- 2. Difficulties of coordination:** In a big organisation there will be a number of departments. When the size of the organisation becomes too large, proper coordination between these department will be difficult. It will affect the overall performance.
- 3. Difficulties in decision making:** In a large firm, before taking a decision it has to consult various departments and decision making will be delayed. Hence, a firm cannot take quick decisions and make quick changes.
- 4. Communication Problems:** In a large firm it is very difficult to communicate the decisions taken by the top management to the lower levels.
- 5. Labour Diseconomies:** Because of extreme division of labour there will be an impersonal atmosphere in large firms and contact between management and workers become less. This may lead to industrial disputes.
- 6. Scarcity of Inputs:** When there are a large number of big firms in a locality, scarcity of factors may be experienced. There will be competition between the firms for labour and other inputs and this will push the price up.

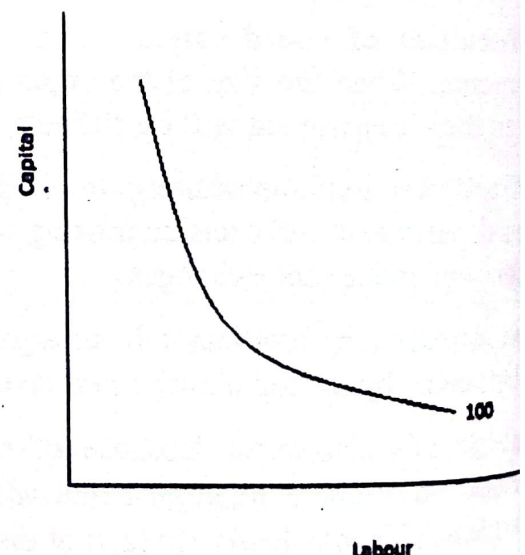
7. Marketing Diseconomies: When the firms expand competition becomes very stiff and necessitates huge expenses on advertisement and other sales promotion activities.

Isoquants

An isoquant is a curve which shows various combinations of two inputs which give the same level of output. 'Iso' means equal and quant means quantity. That is equal quantity of output. Isoquants are also called isoproduct curves or equal product curves. The construction of an isoquant can be explained with the help of the following schedule.

Combinations of Labour and Capital	Units of Labour (L)	Units of Capital (K)	Output of Cloth (meters)
A	5	9	100
B	10	6	100
C	15	4	100
D	20	3	100

In the above schedule labour and capital are taken as the two inputs. All the combinations of labour and capital produce the same level of output, that is 100 meters of cloth. The graphical representation of the schedule gives an isoquant.



Properties of an Isoquant

The following are the important features or properties of isoquants.

Production

1. Isoquants are negatively sloped. An isoquant represents a particular level of output. Hence, when the quantity of one factor input is increased, the quantity of the other input has to be decreased in order to keep the output constant. Therefore, isoquants are negatively sloped.

2. Isoquants are convex to the origin. This is because along the isoquant $MRTS_{LK}$ (Marginal rate of technical substitution of labour for capital) goes on decreasing. $MRTS_{LK}$ is the rate at which one input is replaced by the employment of additional units of the other factor. In other words, how much of capital is replaced by the employment of an additional unit of labour. This is the slope of the isoquant. Slope of the isoquant is $\Delta K/\Delta L$

That is, $MRTS_{LK} = \frac{\Delta K}{\Delta L}$

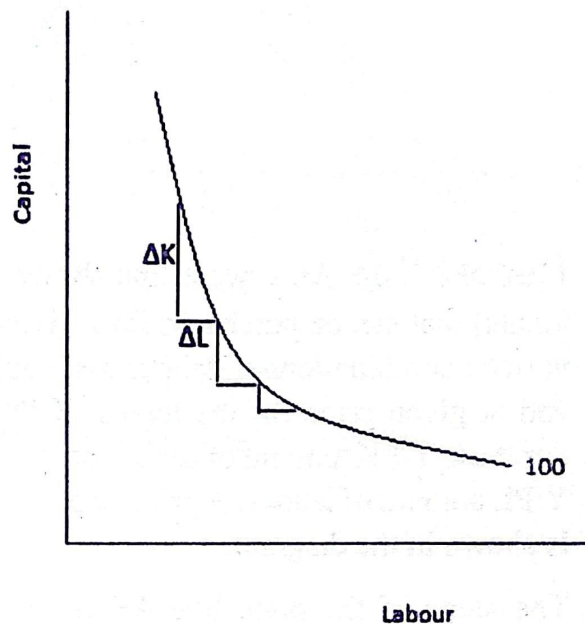
From the diagram, it can be understood that ΔK , the amount capital replaced by one additional unit of labour is going on decreasing,

Since output remains constant along the isoquant, the loss in output due to the replacement of capital should be compensated by the additional output produced with the help of the extra amount of labour employed. That is

$$-\Delta K * MPK + \Delta L * MPL = 0$$

(Where MPK and MPL are the marginal productivity of labour and capital)

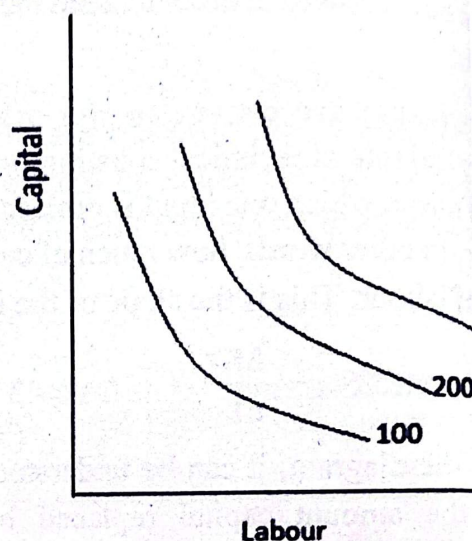
Therefore $-\frac{\Delta K}{\Delta L} = \frac{MPL}{MPK}$



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3. **Two isoquants never intersect.** Each isoquant represents a particular level of output. When two isoquants intersect, the intersecting point will be common and it can't be different levels of output. Logically this is not correct.

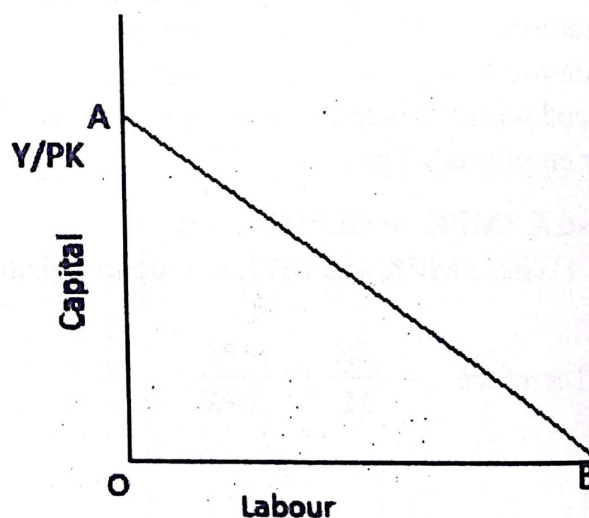
4. **Higher isoquants represent higher levels of output.** A set of isoquants drawn is called an isoquants map. In isoquants map higher isoquant represents higher levels of output.



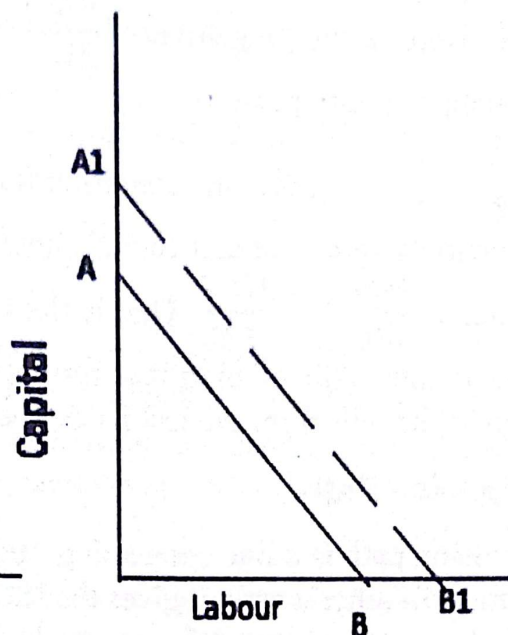
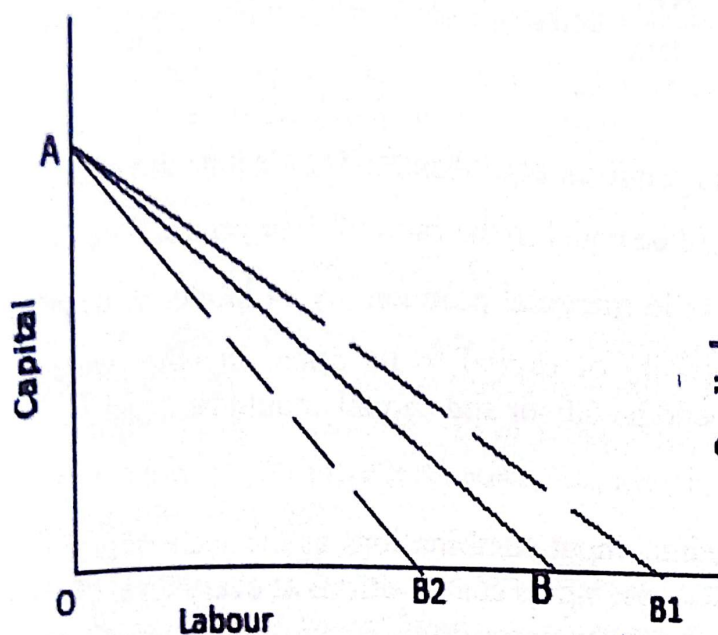
Isocost line An isocost line shows various combinations of labour and capital inputs that can be purchased for a given expenditure of the firm. In other words, it shows various combinations of labour and capital that are available to the firm at the same total cost and at given prices of the inputs. If 'Y' is the total money resources of the firm, it can purchase Y/P_K amount of capital or Y/P_L amount of labour. A price line is shown in the diagram.

The slope of the price line AB is OA/OB or P_L/P_K . Since price of labour is wage (w) and price of capital is interest (r), the slope can be written as w/r .

When the money resources of the firm increase, with given prices of inputs, the price line PL shifts upwards parallelly. When price of labour decreases, point B shifts rightwards and vice versa. Similar is the case of capital.



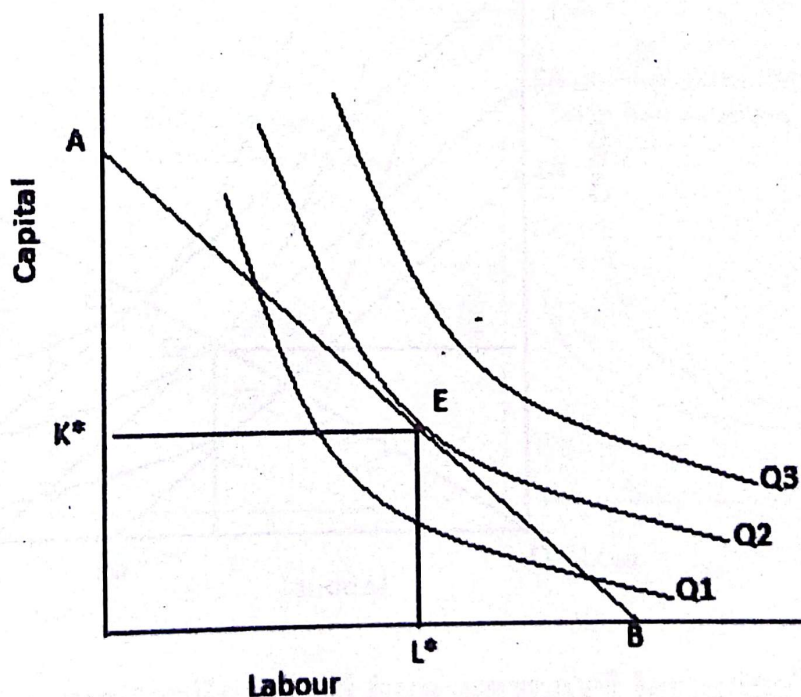
Production



Least Cost Combination – Producer's Equilibrium

A producer will be in equilibrium when he is able to produce a given quantity of output with least cost or when he produces maximum output with a given amount of inputs.

In other words, least cost combination of inputs is that combination which cost least to the firm in producing a certain quantity of output. It is attained at that point where the isoquant is tangent to the isocost line. This is shown in the diagram.



In the diagram, producer is in equilibrium at point E, where the highest possible isoquant is tangent to the isocost line. He is able to produce the maximum output with the available resources. In other words, output Q2 is produced with the least cost.

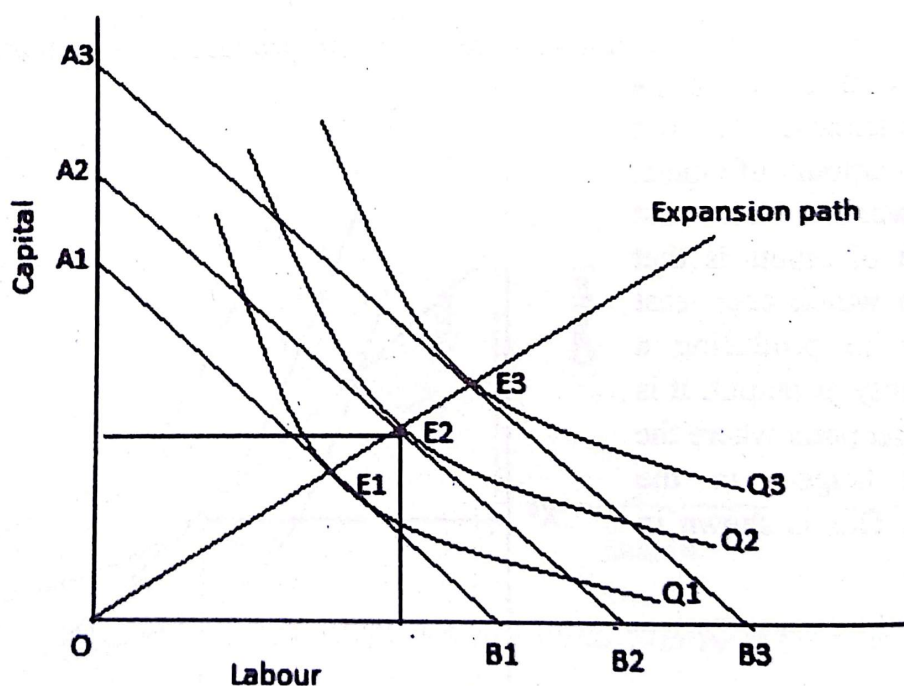
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At the point of tangency, the slope of the isoquant and the slope of the price line are the same. Slope of the isoquant is $-\frac{\Delta K}{\Delta L} = \frac{MPL}{MPK}$ and slope of the isocost line is $\frac{PL}{PK}$. Then at the equilibrium point

$\frac{MPL}{MPK} = \frac{PL}{PK}$ This is the condition for producer equilibrium. That is the ratio of marginal productivity of labour and capital should be equal to the ratio of their prices. It can be written as $\frac{MPL}{PL} = \frac{MPK}{PK}$ That is the ratio marginal productivity of labour to its price should be equal to the ratio of marginal productivity of capital to its price. In other words, the marginal benefit from the last rupee spent on labour and capital should be equal.

Expansion Path

Expansion path is a line connecting optimal input combinations as the scale of production expands. In other words, it gives the least cost input combinations at every level of output. It is a long run concept. We can obtain the expansion path by joining the point of tangency between isoquants and isocost lines of a firm. An expansion path is shown in the diagram below.



Technical Progress and its Implications

When there is a change in technology, the production function will change. There will be an upward shift in the production function which means that more output is produced with the same inputs.

Production

the same level of inputs. In other words, there will be a downward shift of the isoquant which implies that same output is produced with lesser quantities of inputs.

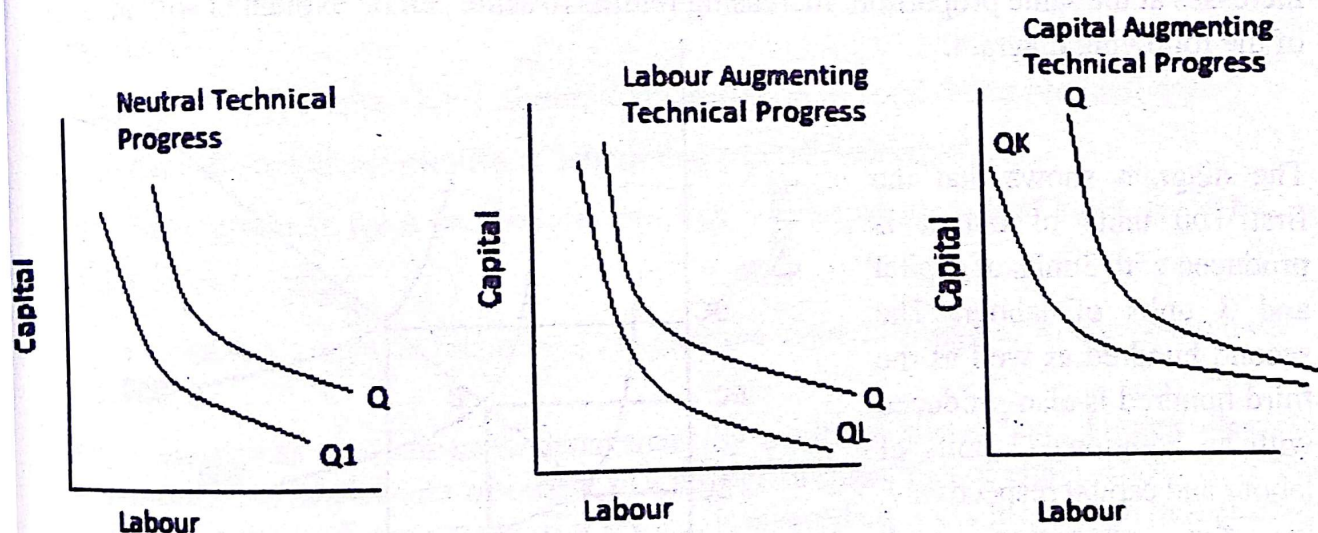
Technical progress may be embodied and disembodied. It is embodied or investment specific when new capital (machinery) is used in the production process. It is disembodied or investment neutral, when output increases without any increase in investment but by an innovation through research.

There are three types of technological progress

1. **Neutral technical progress:** It is neutral when change in the marginal product of labour and capital are same due to the technical progress. In this case there will be a parallel downward shifting of the isoquant. In this case slope of the isoquant or $MRTS_{LK}$ remains the same. In other words, there is an equal reduction in both the inputs in the production of a certain quantity of output.

2. **Labour Augmenting Technical Progress:** It means the marginal product of labour increases faster than the marginal product of capital. Here, the new isoquant becomes more steeper.

3. **Capital Augmenting Technical Progress:** It means the marginal product of capital increases faster than the marginal product of labour. In this case, the new isoquant becomes more flatter.

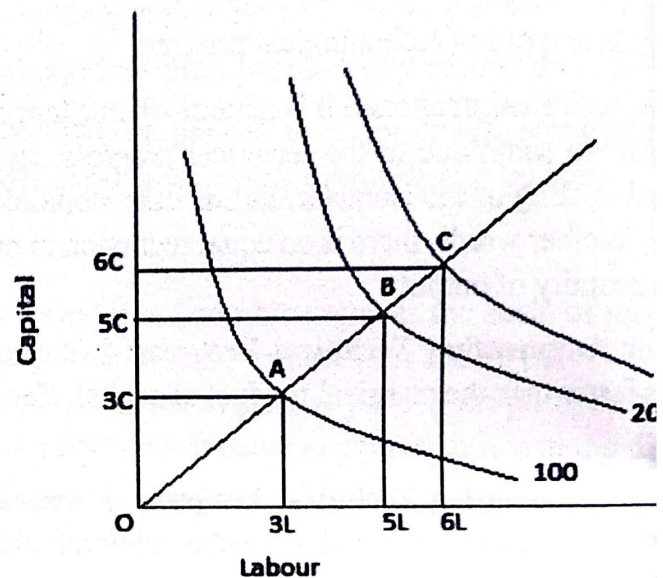


Isoquants and different returns to scales

The laws of returns to scale can also be explained in terms of the isoquants.

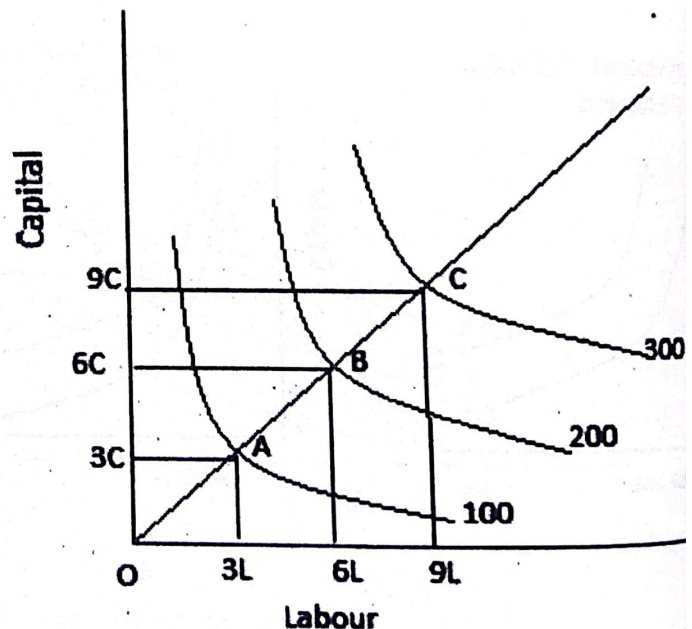
Increasing returns to scale – Increasing returns to scale means that output increases at a greater proportion than the increase in inputs. The following diagram depicts increasing returns to scale.

In the diagram the first 100 units of output is produced with 3 units of capital and labour. The next 100 units need only 2 additional units of labour and capital. The third 100 units of output is produced with an additional one unit of labour and capital. In the expansion path $OA > AB > BC$. This kind of production function shows increasing returns to scale.



Constant returns to scale- Constant returns to scale means the inputs and the output increase at the same proportion. Increasing returns to scale can be explained with the following diagram.

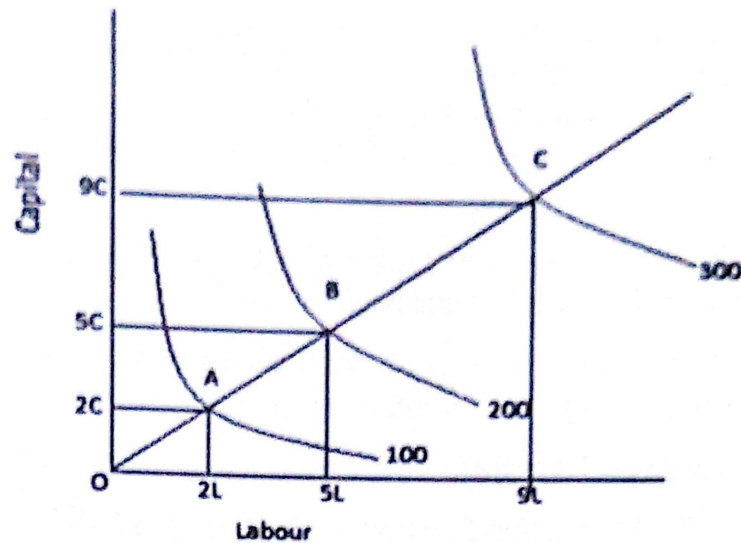
The diagram shows that the first 100 units of output is produced with 3 units of capital and 3 units of labour. The second hundred as well as the third hundred is also produced with an additional 3 units of labour and capital respectively. In the expansion path $OA = AB = BC$. Thus, there is an equal proportionate increase in inputs and output.



Decreasing returns to scale- Decreasing returns to scale means output increases in a lesser proportion than the increase in inputs. A production function with decreasing returns to scale is depicted in the following diagram.

Production

In the diagram the first 100 units of output is produced with 2 units of labour and capital. But the next 100 units is produced by employing an additional 3 units of labour and capital. The third 100 units of output is produced by using 4 units of labour and capital. In the expansion path $OA < AB < BC$. Thus, a larger amount of inputs are needed to produce additional units of output. Hence, the production function shows decreasing returns to scale.



3.5 Cobb-Douglas production function

Cobb-Douglas production function is widely used to represent the technological relationship between the amounts of two inputs, particularly capital and labour, and the amount of output that can be produced by those inputs. It was proposed by Knut Wicksell and tested empirically by Charles Cobb and Paul Douglas in the 1930s.

In its most standard form for production of a single good with two factors, the function is written as

$$Q = AL^\alpha K^\beta$$

where: Q = Total output, L = Labour, K = Capital, A = Total factor productivity

α and β are the output elasticities of labour and capital respectively.

Total factor productivity A can be interpreted as real output per unit of input. It can be written as $A = \frac{Q}{L^\alpha K^\beta}$

The value of A depends on technology. Higher the value of A higher would be the level of output Q .

Output elasticities are constants determined by available technology. Output elasticity measures the responsiveness of output to a change in quantities of either labour or capital used in production. For example, if $\alpha = 0.45$, it means that a 1% increase in labour usage while keeping the quantity of capital constant would lead to approximately 0.45% increase in output.

Cobb-Douglas production function is a homogeneous production function. It means that if L and K are multiplied by a given factor λ then output Q would be multiplied by the same factor λ raised to the power of $\alpha + \beta$ ($\lambda^{\alpha+\beta}$). Cobb-Douglas production function is a homogeneous production function of degree $\alpha + \beta$.

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If $\alpha + \beta = 1$ it is the case of constant returns to scale. Here production function becomes linearly homogeneous. If both the inputs are increased by a factor λ , output will increase by the same factor λ . That is, if the inputs are increased by 10 times, output also increase by 10 times. Cobb-Douglas production function is linearly homogeneous $\alpha + \beta = 1$.

If $\alpha + \beta > 1$ it is the case of increasing returns to scale. In this case output increases at a proportion than the increase in inputs.

If $\alpha + \beta < 1$ it is the case of decreasing returns to scale. Here output increases at a proportion than the increase in inputs.

Numerical Examples

1. Production function is given as $Q = AL^\alpha K^\beta$. Derive marginal product of labor and capital.

$$MP_L = \frac{dQ}{dL} = A \alpha L^{\alpha-1} K^\beta = \frac{\alpha}{L} AL^\alpha K^\beta = \alpha \frac{Q}{L} = \alpha \cdot AP_L$$

$$MP_K = \frac{dQ}{dK} = A \beta K^{\beta-1} L^\alpha = \frac{\beta}{K} AL^\alpha K^\beta = \beta \frac{Q}{K} = \beta \cdot AP_K$$

2. Suppose the production function is given as $Q = 2K^{1/2}L^{1/2}$.

- a) What will be the output when $K=16$ and $L=36$?
- b) What is the marginal product of labour when $K=16$ and $L=36$?
- c) What is the average product of capital when $K=16$ and $L=36$?
- d) Find the number units of capital required to produce 40 units of output if $L=25$?

$$a) \text{ When } K = 16 \text{ and } L = 36 \quad Q = 2 \cdot 16^{1/2} \cdot 36^{1/2} = 2 \cdot 4 \cdot 6 = 48$$

$$b) \quad MP_L = \frac{dQ}{dL} = A \alpha L^{\alpha-1} K^\beta = 2 \cdot \frac{1}{2} \cdot 36^{1/2-1} \cdot 16^{1/2} = 36^{-1/2} \cdot 4 = \frac{4}{6} = \frac{2}{3}$$

$$c) \quad AP \text{ of Capital} = Q/K = 48/16 = 3$$

$$d) \text{ When } Q = 40 \text{ and } L = 25, \quad 40 = 2 \cdot K^{1/2} \cdot 25^{1/2} \text{ i.e. } 40 = 2 \cdot K^{1/2} \cdot 5$$

$$\text{Therefore } K^{1/2} = \frac{40}{10} = 4 \text{ Therefore } K = 16$$

3. It is given as $Q = 3L^{1/2}K^{1/2}$ If labour is increased by 10% what will be the % increase in output?

$$\log Q = \log 3 + \frac{1}{2} \log L + \frac{1}{2} \log K$$

$$\frac{1}{Q} dQ = 0 + \frac{1}{2} \cdot \frac{1}{L} dL + \frac{1}{2} \cdot \frac{1}{K} dK$$

$$= \frac{1}{2} \cdot 10 + 0 = 5\%$$

Chapter 4

Cost of Production

Cost is the expenditure incurred by a firm in the production of a commodity. To produce a commodity a firm needs raw materials, labour, building etc. The expenses of these items are termed as cost.

4.1 Cost Concepts

1. Explicit and implicit cost

Explicit cost is the expenses actually met by the producer while producing a commodity. In other words these are the payments incurred by the producer for outsiders who supply labour, raw materials, electricity etc. These items are recorded in the books of account of a firm.

On the other hand implicit cost is the opportunity cost of the factor services supplied by the organisation itself. Sometimes a firm will be running in a building which is owned by the producer himself. Hence an expense like rent does not arise but a value can be imputed for this. This is implicit cost. Such items will not be recorded.

2. Real cost

This is the actual pain and suffering involved in the production of a commodity. When a person is involved in the production of a commodity he sacrifices leisure and he is not able to spend this time with his family. The value of these sufferings cannot be measured in money terms and they are psychological in nature.

3. Accounting cost

Accounting cost is the money cost that can be recorded in the books of account. This is same as explicit cost. For purpose of accounting only those items are considered, which can be identified, measured and accounted.

5. Social cost

Social cost is the sum of private cost and external cost. Private cost is the cost incurred by the producer in the production of a commodity. These are the expenses of the producer in buying or hiring factor services. However, when a commodity is produced it may cause damages to the environment in the form of air pollution, water pollution etc. These are the external cost and it is met by the society.

6. Replacement cost

Replacement cost is the cost incurred when an asset depreciates and it is replaced by the new asset. That is replacement cost or expenditure does not increase the total cost. Buying a new machine to replace the old one or buying a new car to replace the old one is an example of replacement cost.

7. Sunk cost

Sunk cost is the cost which has already been incurred and cannot be recovered. In other words it is totally irretrievable. It is not used for future decision making. For example, if an oil well is abandoned the money spent on it is lost. But the decision to abandon it is made on the basis of poor cash flows and not on the basis of sunk cost.

Short run and Long run

Short run is a period in which a firm can increase its output only by employing more variable factors such as labour and raw materials. In the short run fixed factors such as building, machinery etc. remain the same.

On the other hand, in the long run all factors are variable. Hence, the size of plant or building can be increased. Thus output can be increased by increasing the quantities of the factors.

4.2 Short run costs

Since in the short run certain factors are fixed and certain other factors are variable, a firm incurs fixed cost and variable cost.

Fixed Cost(TFC) –It is the cost which does not vary with the level of output. In other words it has to be met even at zero level output. Rent of factory building, interest payment, salary of permanent employees etc. are examples of fixed cost. Since fixed cost remains the same in the short period TFC curve is a horizontal straight line parallel to the quantity axis.

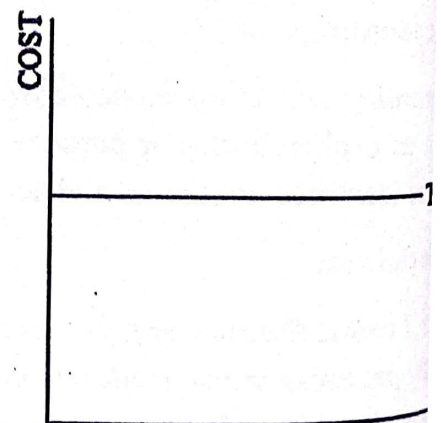


Fig. 4.1 TFC curve

Total variable cost(TVC) – Variable cost is the cost that vary with the level of output. That is, when output is zero variable cost is also zero and as output increases variable cost also increases. Cost of raw materials, wages of workers, transportation cost, fuel charges etc. are examples of variable cost. The TVC curve is an inverse S shaped curve. Initially TVC increases at a decreasing rate and later it increases at an increasing rate. This is because of the operation of the law of variable proportion. That is, when more and more units of variable factors added to fixed factors, initially productivity increases hence the additional cost per unit of output decreases. Therefore TVC increase at a decreasing rate. But beyond a certain level, productivity of the variable factors decreases and hence additional cost per unit of output increases. Therefore TVC increases at an increasing rate.

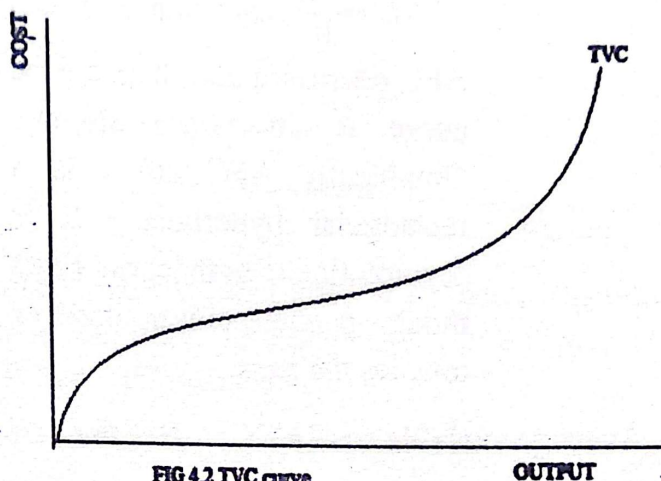


FIG 4.2 TVC curve

Total Cost(TC) – Total cost is the sum of total fixed cost and total variable cost.

$$TC = TFC + TVC$$

TC curve has the same shape of the TVC curve. But it starts from the starting point of the TFC curve because at zero level of output TC equals TFC. The TC curve and TVC curves are parallel.

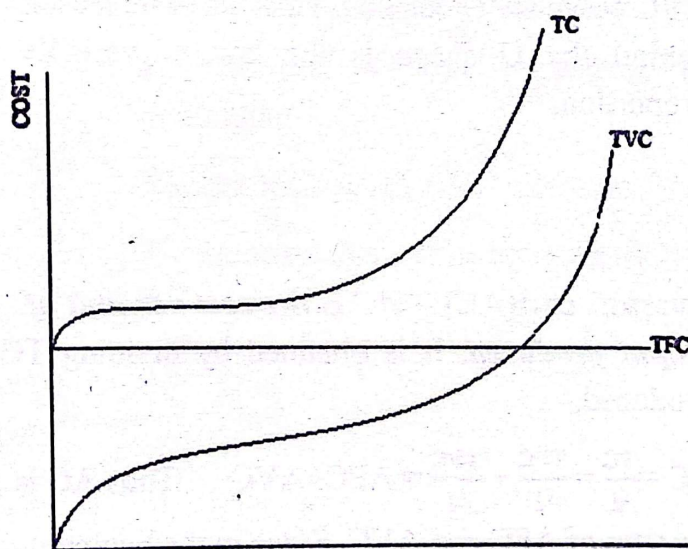


Fig 4.3 TC curve

Average fixed cost(AFC) – It is the fixed cost per unit of output. AFC is obtained by dividing TFC by the number of units of output(Q) produced.

$AFC = \frac{TFC}{Q}$ As output increases AFC decreases and hence AFC curve is downward sloping. Graphically AFC curve is a rectangular hyperbola. It is asymptotic to both axes. Even though it come closer, it never touches the axes.

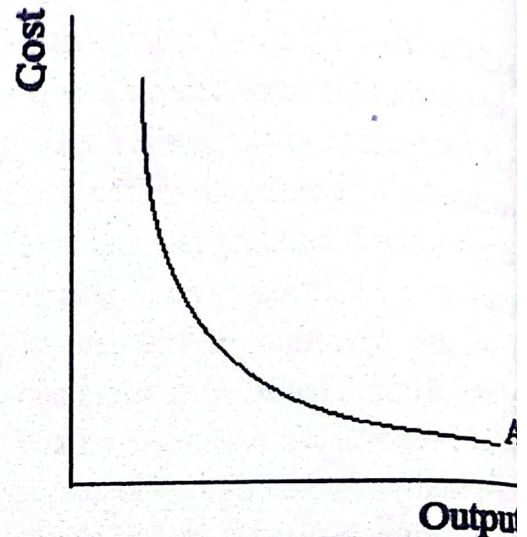


Fig. 4.4 AFC curve

Average variable cost(AVC) – It is the variable cost per unit of output. AVC is obtained by dividing TVC by the number of units of output(Q). $AVC = \frac{TVC}{Q}$ Since in the initial stage of production TVC increases at a decreasing rate, AVC falls. But later TVC increases at an increasing rate and hence AVC rises. Therefore AVC curve is 'U' shaped. Thus the basic reason behind the U shape is the law of variable proportion.

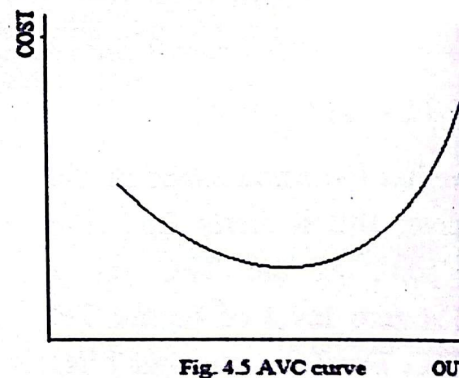


Fig. 4.5 AVC curve

Average cost(AC) – AC is the cost per unit of output produced. It is obtained by dividing TC by the number of units of output produced.

$AC = \frac{TC}{Q} = \frac{TFC}{Q} + \frac{TVC}{Q} = AFC + AVC$ Thus AC is the sum of AFC and AVC. Since in the beginning AFC and AVC are falling, AC also falls. But later AFC continues to fall but AVC rises. However, the rate of increase in AVC is greater than the rate of decrease in AFC. Hence AC rises. In other words when TC increases at a decreasing rate AC falls and when TC increases at an increasing rate AC rises. Here also the basic reason for the U shape is the law of variable proportion.

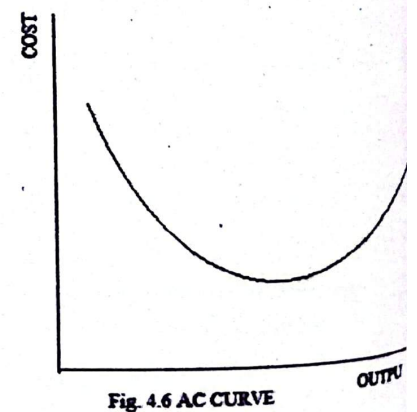


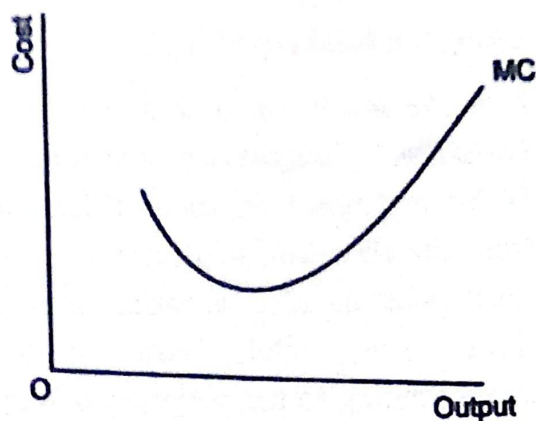
Fig. 4.6 AC CURVE

Cost

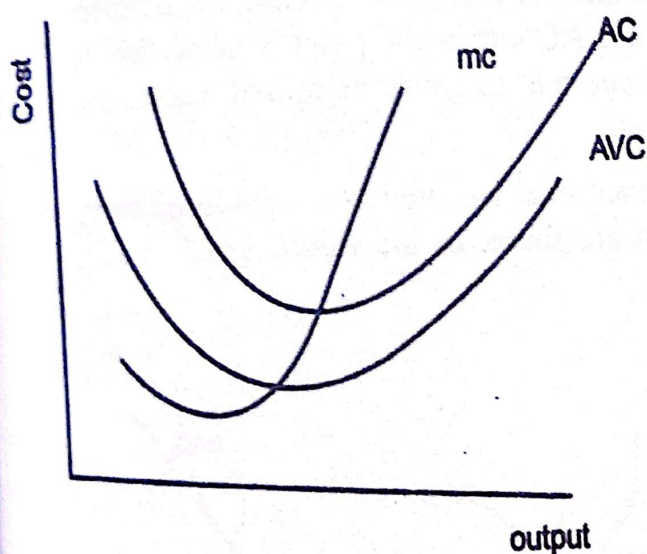
Marginal cost(MC) – MC is the addition to total cost when one more unit of output(Q) is produced.

$$MC = \frac{\Delta TC}{\Delta Q} \text{ or } \frac{dTC}{dQ} \text{ or } MC_n = TC_n - TC_{n-1}$$

MC is derived from TC. But TC is the sum of TFC and TVC. Since TFC is constant changes in TC depends on changes in TVC. Therefore MC ultimately depends on the changes in TVC. When TVC increases at a decreasing rate each addition to TVC will be less and hence MC falls. Later when TVC increases at an increasing rate each addition to TVC will be more and hence MC rises. Therefore MC curve is also U shaped. Graphically MC is the slope of the TC(or TVC) curve.



The relation between MC and AVC or MC and AC



The following are the relation between MC and AVC

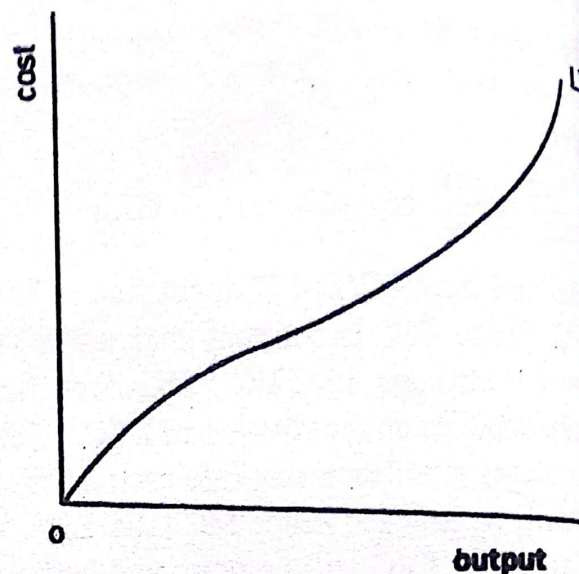
1. When $MC < AVC$, AVC decreases.
2. When $MC = AVC$, AVC is the minimum.
3. When $MC > AVC$, AVC increases.

The same relations exist between MC and AC

Long run is a period which is sufficient to increase the quantities of all the factors such as building, machinery, labour, raw materials etc. Hence all the factors are variable in the long run and therefore there is no fixed cost.

Long run total cost(LTC)

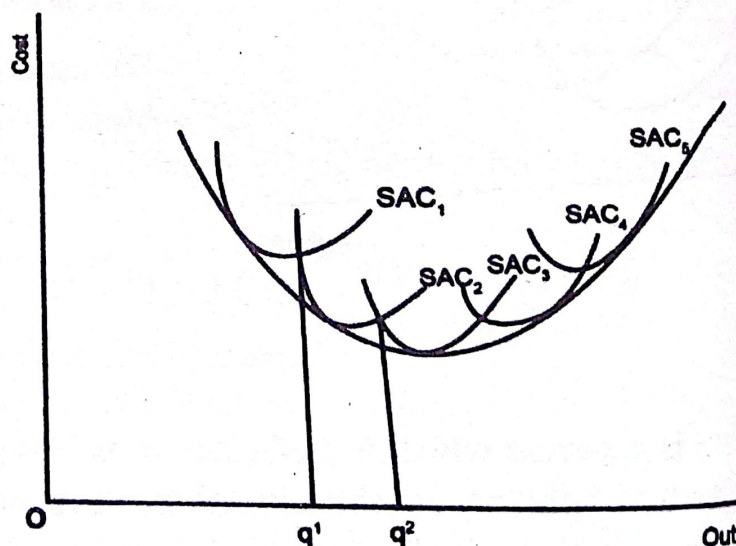
It is the minimum cost at which a given level of output can be produced in the long run. LTC curve is derived from the short run total cost curves. Each point on LTC is taken from a short run total cost curve corresponding to the optimum output represented by that plant size. LTC is also inverse S shape and the reason is returns to scale.



Long run average cost(LAC)

LAC is the cost per unit of output in the long run. It is also derived from short run cost curves(SACs). In the short run one plant size is suitable for producing one level of output. For the next level of output another plant size is suitable and hence number of SACs can be drawn. From each SAC curve one point is taken. Joining points we get the LAC curve. Hence LAC curve is an envelope of SAC curves and is flatter when compared to the SAC curves.

For convenience we assume that only five plant sizes are available to produce a certain level of output. Corresponding to which five SAC curves are there. In the figure SAC₁ is suitable to produce up to q_1 level of output. Even though more output can be produced with same plant size cost will be higher. Therefore it will shift to SAC₂ which comes down because of the operation of economies of scale or advantages of large scale production. It is suitable to produce up to q_2 level of output. Beyond a certain level of output SACs go up because of diseconomies of scale or disadvantages of large scale production.



hundreds of SACs can be drawn and from each SAC curve one point will be taken to form the LAC curve.

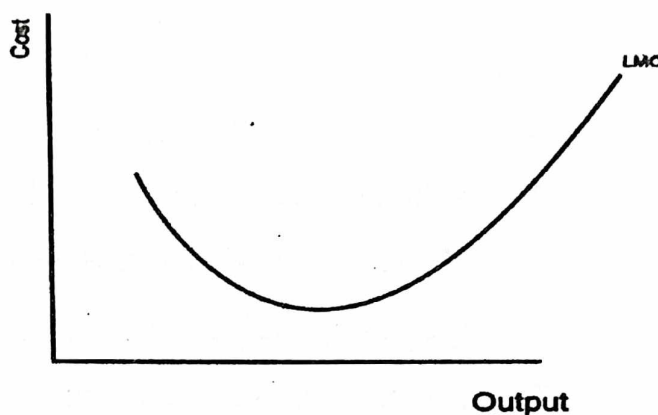
Cost

joining these points we get LAC curve. LAC curve is also U shaped because of the operation of different returns to scales.

Fig.
4.10 Derivation of LAC curve

Long run marginal cost(LMC)

It is the addition to total cost when one more unit of output is produced in the long run. It is derived from Short run marginal cost curves. LMC curve is also U shaped because of different returns to scales in the long run.



Numerical examples

- Complete the following schedule

No. of units Of output	TC	TFC	TVC	MC
0	100	----	----	
1	150	----	----	50
2	----	----	----	40
3	-----	----	120	----

Answer

No. of units Of output	TC	TFC	TVC	MC
0	100	-100-	--0---	
1	150	-100----	50-	50
2	190-	-100--	-90--	40
3	220--	-100--	120	30-

- The total cost function of a firm is given as $TC = 1000 + 10Q - 6Q^2 + Q^3$.

- Derive TVC, MC, AVC and AC
- What is the TFC when output equals 500 units?
- What is MC when output is 100 units?

d) Find the level of output where MC is minimum.

$$a) TVC = 10Q - 6Q^2 + Q^3 \quad MC = \frac{dTC}{dQ} = 10 - 12Q + 3Q^2$$

$$AVC = \frac{TVC}{Q} = 10 - 6Q + Q^2 \quad AC = \frac{TC}{Q} = 1000/Q + 10 - 6Q + Q^2$$

b) $TFC = 1000$ TFC will be same for all levels of output

$$c) MC = 10 - 12Q + 3Q^2 \text{ When } Q = 100 \quad MC = 10 - 12 \cdot 100 + 3 \cdot 100^2 = 28810$$

d) $MC = 10 - 12Q + 3Q^2$ When MC is minimum the first derivative should be zero

$$\text{That is } \frac{dMC}{dQ} = 0 \quad \frac{dMC}{dQ} = -12 + 6Q = 0 \quad Q = 2$$

To prove that MC is minimum the second derivative should be greater than zero

$$\text{That is } \frac{d^2MC}{dQ^2} > 0 \quad \frac{d^2MC}{dQ^2} = 6 \quad \text{Hence the condition is proved.}$$

4.4 Revenue

Revenue is the income from the sale of output.

Total Revenue(TR)- It is the total receipts from the sale of a given quantity of output is obtained by multiplying quantity sold(Q) by price per unit(P).

$$TR = P \cdot Q$$

Average Revenue(AR)- It is the revenue per unit of output sold. AR is obtained by dividing TR by the number of units of output sold(Q).

$$AR = \frac{TR}{Q} = \frac{P \cdot Q}{Q} = P \quad \text{That is AR is the price}$$

Marginal Revenue(MR)- It is the addition to total revenue by selling one more unit of output.

$$MR = \frac{dTR}{dQ} \text{ or } MR_Q = TR_Q - TR_{Q-1}$$

TR, MR and AR under imperfect competition – under imperfect competition (as explained in the chapter market) a seller can sell larger quantity at a lesser price. Therefore additional revenue, that is marginal revenue goes on decreasing as output sold increases. Therefore AR curve as well as MR curve is downward sloping.

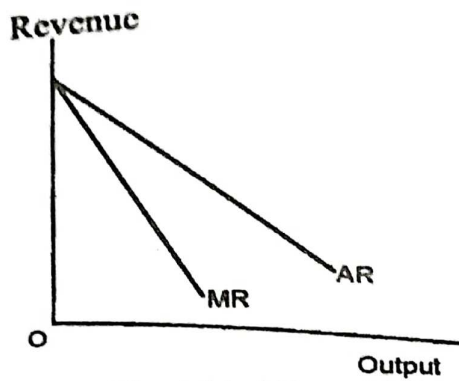


Fig 4.11 AR and MR

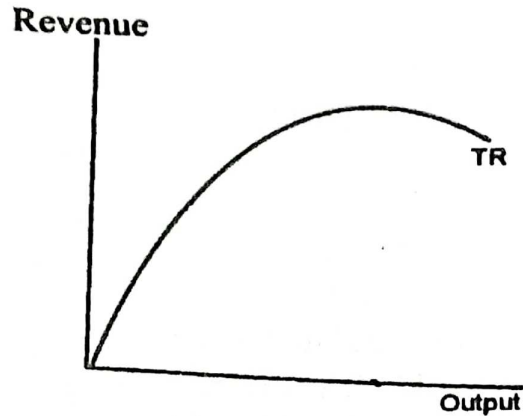


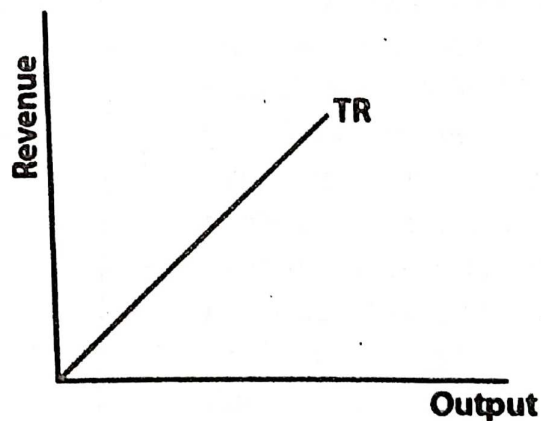
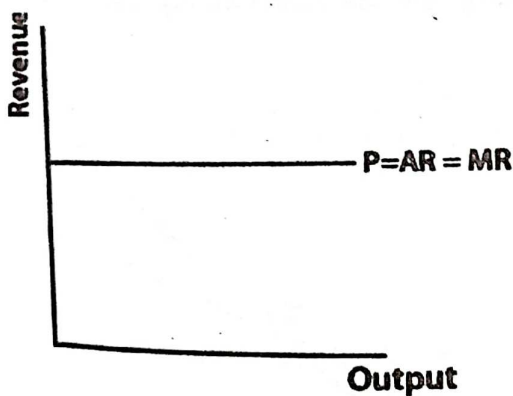
Fig 4.12 TR

Relation between MR and TR

The following relations can be observed between MR and TR

1. When MR is positive TR increases.
2. When MR is zero TR is maximum
3. When MR is negative TR decreases

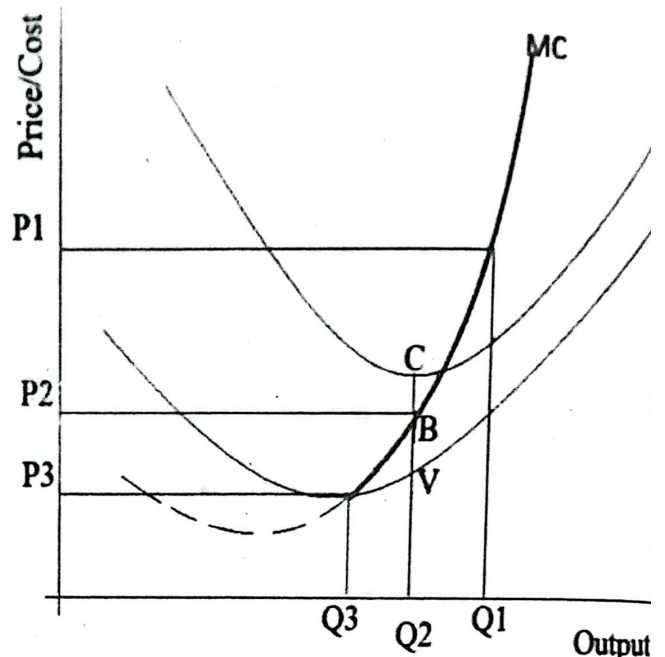
TR, MR and AR under perfect competition – Under perfect competition (meaning explained in the chapter market) every unit of a commodity is sold at the same price. Hence AR, MR and price will be the same and it will be a horizontal straight line parallel to the x-axis. TR curve will be an upward sloping straight line.



4.5 Shut down point in the short run

Suppose the price of a product is less than AC. It is still beneficial for the firm to continue production till price is greater than AVC. Because AC is the sum of AFC and AVC. Therefore when Price is greater than AVC it can cover AVC as well as a part of AFC. Once the price equals AVC it may stop production. Therefore **price=AVC is the shutdown point of the firm. That is the minimum point of the AVC curve.**

Suppose price is P_1 , the firm will supply a quantity (Q_1) where price equals marginal cost. Since this price is greater than AC, the firm is getting a profit. When price falls to P_2 , it is less than AC and hence there is a loss (BC). But still it is beneficial for the firm to produce in the short run because when it produces Q_2 level of output the firm is able to cover its variable cost (Q_2V) and a part of the

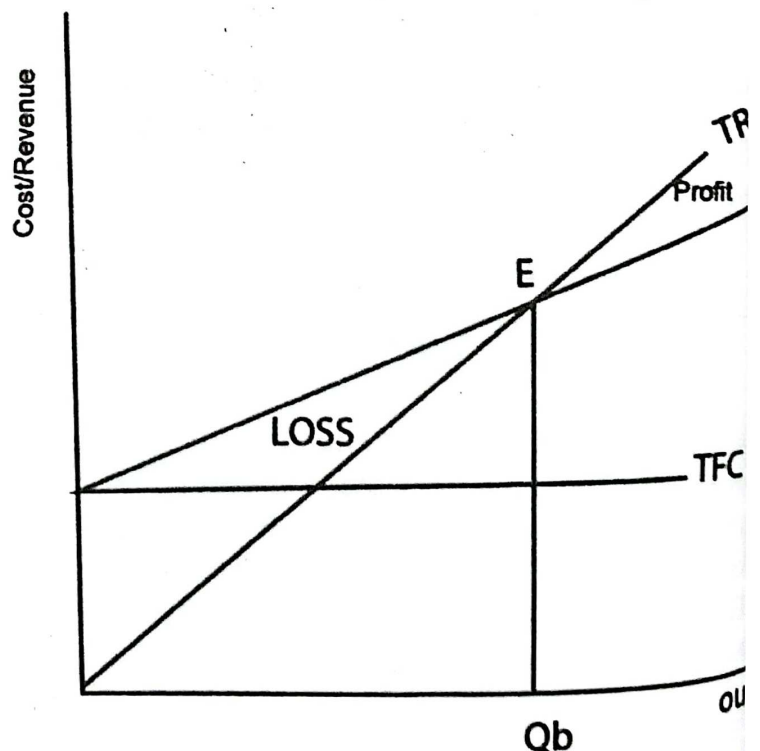


fixed cost (VB). Hence the loss will be BC only. If it stops production, loss per unit will be VC. Once the price reaches P_3 , it may stop producing because the

firm is able to cover its variable cost only. Thus the supply curve of a firm is that portion of the MC curve which is above the AVC curve (or the shut down point).

4.6 Break-even Analysis

Break-even analysis is a method that is used to analyse the relationship between cost, total revenue and profit of an organisation at different levels of output. Since it gives profit at different levels of projected sales, it is used as an important tool of managerial decision making. The most important aspect of break-even analysis is identifying the break-even point. It is the point at which total revenue of a firm equals total cost. In other words, it is the point at which there is no profit.



Cost

or loss for the firm. There are different approaches to break-even analysis.

Graphical method

The graphical method construct the break-even chart. This method is based on the assumption that cost and revenue functions of the firm are linear. That is TR curve and TC curves are straight lines. TR and TC are measured along the y-axis and output along the x-axis.

At point E the TR curve intersects the TC curve. Hence, E is the break-even point where the firm produce Q_b level of output. The gap between the TC curve and the TR curve beyond the Q_b level of output shows profit and the gap below this level of output shows loss. At the break-even point there is no loss or profit.

Algebraic Method

Let, P be the price of the product and Q_b the break-even level of output. At the break-even point total revenue equals total cost.

That is $TR = TC$ ($TR = P * Q_b$ and $TC = TFC + TVC$)

Therefore $P * Q_b = TFC + TVC$ ($TVC = AVC * Q_b$)

$$P * Q_b = TFC + AVC * Q_b$$

$$P * Q_b - AVC * Q_b = TFC$$

$$Q_b = \frac{TFC}{P - AVC}$$

The difference between price and average variable cost (P-AVC) is the contribution margin per unit of output sold. It is that part of the price which contributes to cover fixed cost and to profit of the firm.

PV Ratio

P/V Ratio (Profit Volume Ratio) is the ratio of contribution to sales which indicates the contribution earned with respect to one rupee of sales. If per unit sales price and variable cost are constant then P/V Ratio will be constant at all the levels of output. A change in fixed cost does not affect P/V Ratio.

$$PV \text{ Ratio} = \frac{\text{Contribution}}{\text{Sales}} \text{ Since Contribution} = \text{Sales}(S) - \text{Variable cost}(V)$$

$$PV \text{ Ratio} = \frac{\text{Sales} - \text{Variable cost}}{\text{Sales}} = \frac{S - V}{S}$$

This ratio can also be shown in the form of percentage by multiplying by 100. Thus, if selling price of a product is Rs. 20 and variable cost is Rs. 15 per unit, then

$$PV \text{ Ratio} = \frac{20 - 15}{20} \times 100 = \frac{5}{20} \times 100 = 25\%$$

(If we take total revenue and total variable cost to estimate the ratio, it will not make any difference)

In the above example, for every Rs. 100 sales, Contribution of Rs. 25 is made after meeting the fixed expenses and then the profit.

Using PV ratio also break-even point(BEP) can be estimated

$$\text{BEP} = \frac{\text{TFC}}{\text{PV Ratio}} \quad \text{OR} \quad \text{BEP} = \frac{\text{TFC} \times S}{S - V}$$
 When this formula is applied we get break-even point in Rupees, that is in terms of TR.

Margin of safety

Margin of Safety is the sales beyond break-even point. It is calculated as the difference between total sales and the break-even sales. It can be expressed in monetary terms or number of units. It can be expressed as below:

$$\text{Margin of Safety} = \text{Sales} - \text{Break Even Sales}$$

If margin of safety is large, which indicates that BEP is much below the actual sales, it means business is in a sound condition and reduction in sales will not be a problem for the business. On the other hand, if margin of safety is low, any loss of sales may be a serious matter. Thus, efforts need to be made to reduce fixed costs, variable costs or increase selling price or sales volume to improve contribution.

Uses of Break-even analysis

- (i) It helps in the determination of selling price which will give the desired profits
- (ii) It helps in the fixation of sales volume to get a desired level of revenue.
- (iii) It helps in making inter-firm comparison of profitability.
- (iv) It helps in determination of costs, revenue and profit at various levels of output
- (v) It helps in managerial decision-making

Limitations of Break-Even Analysis

1. Break-even analysis is based on the assumption that all costs and expenses can be clearly separated into fixed and variable components. In practice, however, it may not be possible to achieve a clear-cut division of costs into fixed and variable types.
2. It assumes that fixed costs remain constant at all levels of activity. However, fixed costs tend to vary beyond a certain level of activity.
3. It assumes that variable costs vary proportionately with the volume of output. In reality, it may not be varying in direct proportions.

Cost

4. There is no provision for changes in selling price.
5. It is based on the assumptions that whatever is produced is sold. This may not happen.
6. It assumes that the business conditions may not change which is not true.

Numerical examples

1. Suppose a firm makes candles and every month it has to pay Rs. 3000 as rent and Rs.3000 as interest charges. If the selling price of a candle is Rs. 5 and variable cost per candle is Rs.2

- a) Estimate the break-even level of output
- b) If the sales is 5000 candles, what will be the profit?
- c) To get a profit of RS. 15000 how many candles are to be produced
- d) If the sales is 5000 candles what is the margin of safety?
- e) Estimate profit volume ratio and break-even sales.
- f) If the firm wants to bring down the break-even output to 1500 units what should be the price charged?

a) $TFC = 3000 + 3000 = 6000$ $P = 5$ $AVC = 2$

$$BEP = \frac{TFC}{P - AVC} = \frac{6000}{5 - 2} = 2000 \text{ units}$$

b) $Profit = TR - TC$ $TR = P * Q = 5 * 5000 = 25000$

$$TC = TFC + TVC = 6000 + 2 * 5000 = 16000$$

$$TR - TC = 25000 - 16000 = 9000$$

c) $TR - TC = 15000$

$$15000 = 5 * Q - (6000 + 2 * Q) = 5Q - 2Q - 6000 = 3Q - 6000$$

$$3Q = 21000 \quad Q = 7000 \text{ Therefore 7000 candles are to be produced to get a profit of Rs. 15000}$$

d) $Margin \text{ of safety} = Actual \text{ sales} - Break\text{-}even \text{ sales} = 5000 - 2000 = 3000 \text{ units}$
Or $Rs. 15000 (5000 * 5 - 2000 * 5)$

e) $PV \text{ ratio} = (S - V) / S = (5 - 2) / 5 = .6$ or $0.6 * 100 = 60\%$

$$Break\text{-}even \text{ sales} = TFC / PV \text{ Ratio} = 6000 / 0.6 = 10000$$

This the break-even sales in Rupees. To find BEP in units divide it by price

$$\text{That is } 10000 / 5 = 2000 \text{ units}$$

f) $1500 = \frac{6000}{P - 2}$ ie $P - 2 = 6000 / 1500 = 4$

Industrial Economics and Foreign Trade

Therefore $P = 4 + 2 = 6$ The firm should charge a price of Rs.6 per can to bring down the break-even output to 1500 units

2. Suppose the monthly fixed cost of a firm is Rs. 20000 and its monthly total variable cost is Rs. 30000.

a) If the monthly sales is Rs. 60000 estimate contribution and break-even sales. If the firm wants to get a monthly profit of Rs.20000, what should be the sales?

a) Contribution = $S - V = 60000 - 30000 = 30000$

Break-even Sales = $\frac{TFC}{PV \text{ Ratio}}$

$TFC = 20000 \quad S = 60000 \quad V = 30000$

$PV \text{ Ratio} = \frac{S-V}{S} = (60000-30000)/60000 = 0.5$

Break-even Sales = $\frac{TFC}{PV \text{ Ratio}} = 20000/0.5 = 40000$

b) Sales to earn a desired profit = $\frac{TFC + \text{Desired profit}}{PV \text{ Ratio}}$
 $= (20000 + 20000)/0.5$
 $= 80000$

A relation exist between AR, MR and price elasticity of demand

$AR = MR \left\{ \frac{e}{e-1} \right\}$ Where e is the elasticity of demand

Chapter 5

Market

Market is a place or a process where the interaction between buyers and sellers takes place in order to buy or sell a product. This interaction may take place at a particular place, over telephone or through internet. There are different types of market structures in an economy. It depends on nature of competition, type of product, number of buyers and sellers, freedom of entry and exit from the market etc. Based on these features a market can be perfect competition, monopoly, monopolistic competition, oligopoly etc.

5.1 Perfect Competition

Perfect competition is a market situation in which there are a large number of buyers and sellers dealing in a homogeneous product with perfect knowledge about the market conditions and perfect mobility of goods and factors of production. It appears to be a hypothetical market condition but the study of this market situation is very essential to understand other forms of market structures. The following are the important features of perfect competition.

1. **Large number of buyers and sellers** – The number of buyers and sellers is so large that the act of a single seller or buyer cannot influence price or output in the market. That is each seller or buyer is an insignificant part of the market.
2. **Homogeneous product** – Under perfect competition all sellers are selling an identical product which is same in appearance, colour, quality etc. and hence they are perfect substitutes. Since all sellers are selling the same product, they can charge only the same price.
3. **Freedom of entry and exit** – There are no restrictions on the entry and exit of firms. Thus there is open competition. It ensures normal profit in the market. If the existing firms are earning supernormal profit new firms will enter into the market. This increases supply and reduces the profit margin. On the other hand if there is loss some of the sellers will leave the market. This help the remaining sellers to earn normal profit.
4. **Perfect knowledge** – Buyers and sellers have perfect knowledge about market conditions. Buyers know about the product and its price. Similarly sellers have the knowledge about the price of the factor inputs, technology etc. This also ensures a uniform price of the product.

5. **Perfect mobility of goods and factors of production** – Goods and production are free to move from one place to another place or from one industry to another industry.
6. **Absence of transport cost** – It is assumed that transport cost is absent in perfect competition. This also ensures uniform price.
7. **Perfectly elastic demand curve** – Under perfect competition a firm can sell any amount of the commodity at the price determined in the market by market demand and market supply. Hence the demand curve is a horizontal straight line parallel to the x-axis.

Equilibrium of a Firm

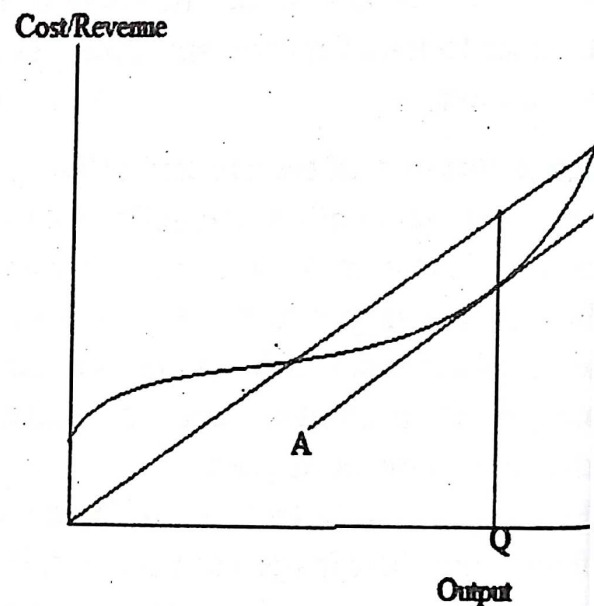
Under any market situation a firm is in equilibrium when it gets maximum profit.

There are two approaches to find the profit maximising level of output.

TC, TR Approach

Under this approach a firm will be in equilibrium when it produces that level of output where the difference between TR and TC (profit) is the maximum.

In the diagram when the firm produces Q level of output the difference between TR and TC is the maximum. Hence, it is the equilibrium output. To find the equilibrium output a tangent is drawn to the TC curve which is parallel to the TR curve. This is the case in perfect competition.



MC MR Approach

Under this approach profit will be maximum when the following two conditions are satisfied.

1. At the equilibrium point marginal cost of the firm should be equal to its marginal revenue ($MC = MR$)
2. At the point of equilibrium MC should be rising

Market

AR curve and MR curve of a firm under perfect competition

Under perfect competition price of a product is determined for the entire industry by the forces of market demand and market supply. This price is accepted by each firm in the industry. Therefore a seller under perfect competition is called a price taker. A seller can sell any amount of the commodity at this price. Hence the demand curve facing a seller under perfect competition is perfectly elastic. It is a horizontal straight line parallel to the x-axis. If he increases the price he will lose his customers because all the sellers are selling an identical product. If he reduces the price he will face a loss because under perfect competition usually a firm get normal profit.

A seller can sell any amount at the price prevailing in the market. Whether he sells one unit or thousand unit, price will be the same. Since all units of the commodity are sold at the same price, under perfect competition price, MR and AR will be the same and the *price line, MR curve and AR curve will be a horizontal straight line parallel to the x-axis*. The demand curve (AR curve) facing a seller under perfect competition is shown below.

In Economics a firm means a single business establishment which produces a product. Industry comprises all such firms produce the same product in the market.

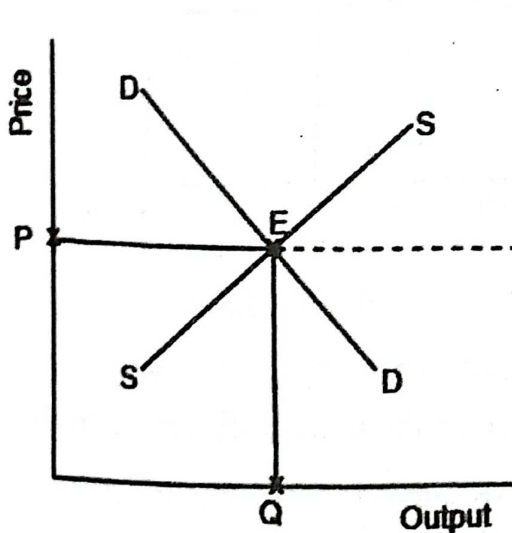


Fig. 5.2 Equilibrium of industry

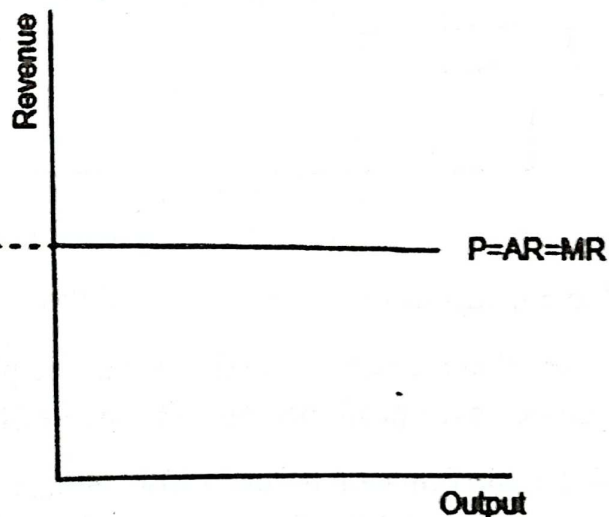


Fig 5.3 AR, MR and price

In the above diagram the industry is in equilibrium at point E where market demand curve intersect market supply curve. P is the market price determined and this price is accepted

by a firm. At this price P a firm can sell any amount of the commodity. The demand curve or AR curve is perfectly elastic.

Under any market condition AR curve is the demand curve

MC, MR Approach under perfect competition

A firm is in equilibrium when it gets maximum profit. Profit will be maximum when it satisfies the two equilibrium conditions. That is $MC = MR$ and MC is rising at the equilibrium. MR curve of a firm is a horizontal straight line and MC curve is U-shaped. Usually in the short period a firm may earn supernormal profit, normal profit or loss. But in the long run a firm gets normal profit only because whenever there is supernormal profit new firms will enter and when there is loss some of the existing firms will leave the market. In this way supply will be adjusted and the equilibrium price will increase or decrease accordingly.

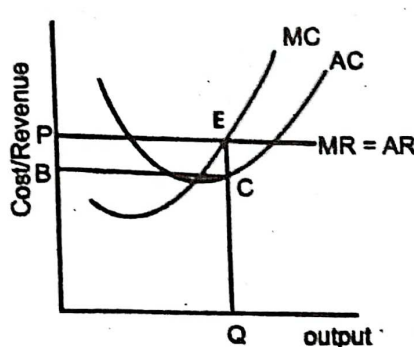


Fig 5.4 supernormal profit

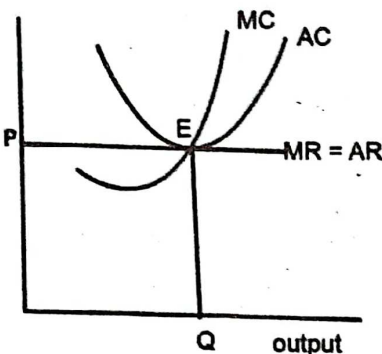


Fig 5.5 Normal profit

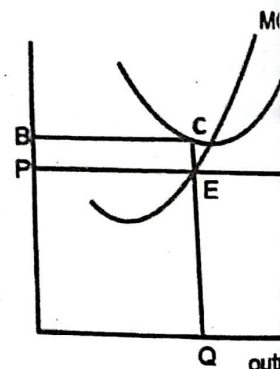


Fig 5.6 Loss

When there is supernormal profit at the point of equilibrium E , AC is less than MC . The gap EC is the profit per unit. The area $PECB$ represents the total profit earned by the firm.

When the firm earns normal profit, at the point E , the AR curve is tangent to the AC curve. Hence AR and AC will be equal. Since AC includes normal profit, the firm gets normal profit when it produces Q level of output. Mostly in the long run a firm gets normal profit.

When there is a loss, at point E where MC equals MR , AC is greater than MR . The gap between AC and AR that is EC is the loss per unit and $PECB$ is the total loss. When the firm produces Q level of output it can minimise the loss.

5.2 Monopoly

Monopoly means a single seller. *It is a market situation in which a single seller controls the entire supply of a commodity.* In other words monopolist has the full control over price and output. Indian Railway is a monopoly of the government.

Features of monopoly

1. **Single seller** – under monopoly there is only a single seller who controls entire production and distribution of a commodity. Since there is only one seller there is no competition and the seller can charge any price for his product. Further, in monopoly there is no distinction between firm and industry because the firm itself is the industry.
2. **No close substitutes** – Monopolist is selling a product which has no close substitutes. Close substitute means goods which satisfy the same want.
3. **Barriers to entry** – Freedom of entry is restricted in monopoly. There are certain barriers for the entry of new firms. These barriers may be in the form of legal restrictions, exclusive ownership of certain resources, technical knowhow which is not available to other firms or economies of scale which help the firm to reduce cost of production in the long run.
4. **Price maker** – Since the monopolist is only seller of a product which has no close substitutes there is no competition from other sellers. Hence he can fix any price for his product. Therefore a monopolist is a price maker.
5. **Downward sloping demand curve** – Even though in monopoly price is fixed by the monopolist a consumer can decide whether he has to buy the product at that price or not. A consumer purchases a larger quantity only at a lesser price. That is a monopolist can sell a larger quantity at a lesser price and hence the demand curve or AR curve facing a monopolist is downward sloping.

MR curve and AR curve(demand curve) of a monopolist

As mentioned earlier a monopolist can sell a larger quantity only at a lesser price. Hence the MR curve of a monopolist will be downward sloping. As MR curve is downward sloping AR curve also will be downward sloping. But the AR curve will be less price elastic as there are no close substitutes in the market. Even if the monopolist changes the price there will not much change in demand.

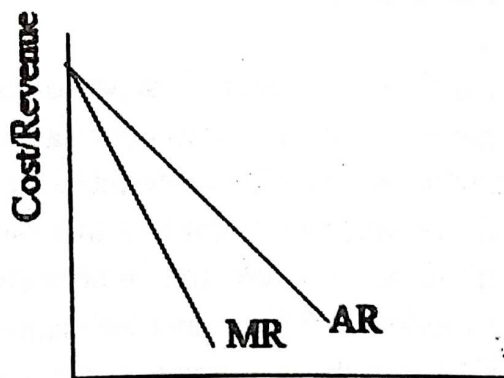
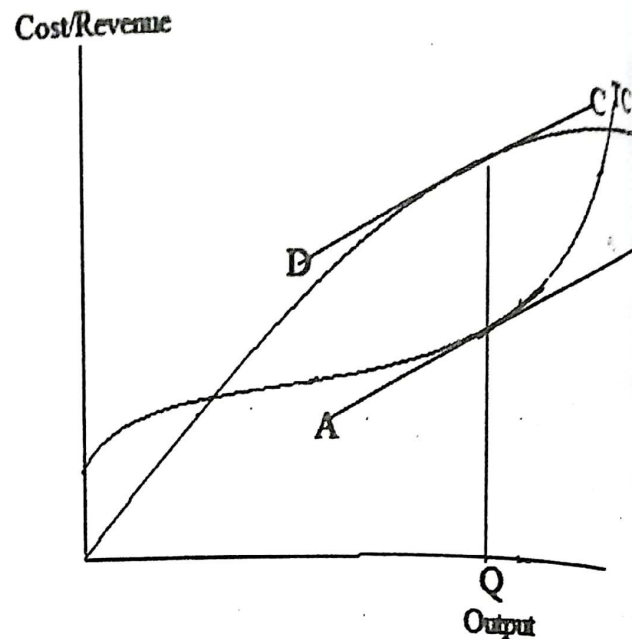


Fig.5.6 AR and MR

Equilibrium Price and Output Determination-

TC, TR Approach (Imperfect competition)

-A firm will be in equilibrium when he gets maximum profit. Profit is maximum when the difference between TR and TC is maximum. This situation is shown below.



In the diagram tangents AB and CD are drawn to the TC curve and TR curves in such a way that they are parallel. When these tangents are parallel the gap between TR and TC is maximum. That profit is maximum and the firm is in equilibrium and it produces Q level of output.

MC, MR Approach

Usually a monopolist earns supernormal profit because the monopolist has complete control over the supply of a commodity. Price and output determination is explained with the following diagram.

In the diagram at point E, $MC = MR$ and MC curve intersects MR curve from below. E is the equilibrium point and OQ is the equilibrium level of output. When the firm produces OQ level of output, QA is the AR or price. But the average cost is less than this and it is QB. Hence AB is the profit per unit. The rectangle PABC shows the total profit earned by the monopolist.

However to control supernormal profit the government may impose a tax and this may reduce the profit. Hence there are rare chances for normal profit and loss to a monopoly firm. If there is loss the monopoly firm may be closed down. (Diagrams are same as 5.12 and 5.13 to show normal profit or loss for a monopolist)

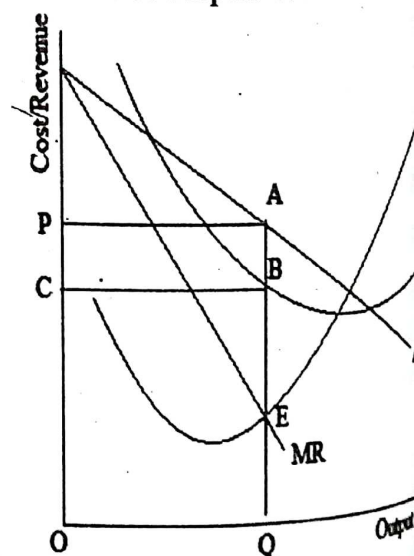


Fig 5.9 Equilibrium under Monopoly

Price Discrimination

It is the act of charging different prices for the same product from different consumers. For example, a doctor charges different fees from poor and rich patients or for electricity low rates are charged for domestic consumption and high rate for commercial consumption.

Dumping

It means a monopolist sells his product at a higher price in the home market and lower price in the international market. This may be to clear the excess or outdated stock or to increase the market share, or to avoid competitors.

Regulation of Monopoly

Gregory Mankiw has suggested the following measures to control monopoly.

1. Increasing competition with Antitrust Laws: Antitrust laws are statutes developed by governments to protect consumers from monopoly practices and ensure fair competition. Antitrust laws allow the government to prevent merger. They also allow the government to breakup companies. Further, antitrust laws prevent the companies from coordinating their activities. In India there is the MRTP Act (Monopolies and Restrictive Trade Practices Act) to control monopolies.

2. Regulation: Through regulation the government does not allow the companies to charge any price as they wish. The government agencies regulate the price. For example, water and electricity charges are regulated by the government authorities.

3. Public Ownership: In this case, instead of regulating monopoly run by a private firm, the government run the monopoly itself. That is the government become the owner.

However, each of these measures have some drawbacks. Therefore, some economists argue that it is better not to regulate monopoly pricing.

5.3 Monopolistic Competition

The term monopolistic competition was given by Prof. Edward H Chamberlin. *It is a market situation in which, there are a large number of buyers and sellers dealing in a differentiated product.* Even though the product produced by each seller is not identical, they are close substitutes. They may differ in colour, shape, taste etc. Different brands of bath soap, soft drinks etc. are examples. Monopolistic competition is the real world situation.

Since the product is differentiated, the product of each seller has a unique feature, giving him a monopoly power over his product. At the same time product of each seller is a close substitute for the product of another producer and there are large number of buyers and sellers. Hence the competitive element is present. Thus monopolistic competition is a combination of perfect competition and monopoly.

Features of Monopolistic competition

1. **Large number of buyers and sellers** – Similar to perfect competition there is a large number of buyers and sellers in monopolistic competition. But the number of sellers is not as large as in perfect competition. The number of buyers is so large that each buyer buys an insignificant part of the total output.
2. **Product differentiation** – Product differentiation is the essence of monopolistic competition. It can be in the form of changes in colour, shape, quality, price etc. Therefore product of each producer has a unique feature and this gives him a monopoly power over his product.
3. **Selling cost** – Each seller is selling a product which are close substitutes. Hence there is acute competition between sellers and they spend huge amount on advertisement and other sales promotional activities. This is called selling cost.
4. **Freedom of entry and exit** – There are no restrictions on the entry or exit of firms. New firms can enter into the industry or loss making firms can leave the industry at any time.
5. **Imperfect knowledge** – The information about market conditions like price, quality, cost etc. is not uniformly available to all buyers and sellers.

AR curve(Demand curve) and MR curve of a firm

AR curve or demand curve of a firm is downward sloping. This is because a seller can sell more only at a lesser price. Even though the seller has a small degree of monopoly power over his product, other sellers are also selling very close substitutes. Hence if he reduces the price he can get the customers of other sellers and hence the demand increases. On the other hand if he increases the price some of his customers will buy substitutes and hence the demand decreases. Thus demand curve is normal demand curve.

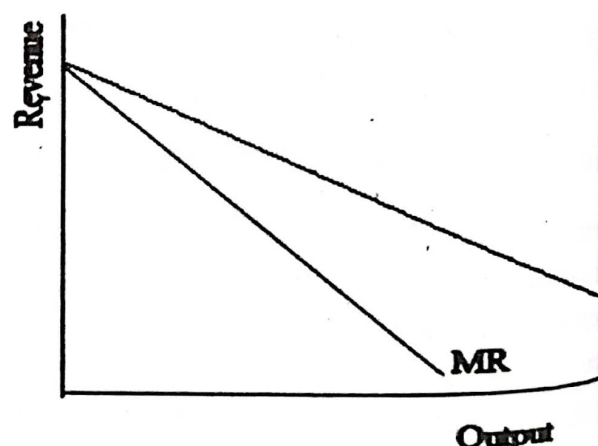


Fig 5.10 MR and AR

Market

When compared to the demand curve of a monopolist it is more flat or price elastic. In monopoly close substitutes are not available hence demand is less elastic. But in monopolistic competition products are close substitutes and hence a small change in price may cause a larger change in demand. MR curve lies below the AR curve.

Price and output determination

A firm in monopolistic competition is in equilibrium when it maximises profit. Profit is maximum when it produces that level of output where $MC=MR$ and MC is rising at the equilibrium point. Usually a firm earns supernormal profit in the short run. This situation is explained with the help of the following diagram.

In the diagram at point E, $MC = MR$ and at this point firm is producing OQ level of output. When production is OQ, average cost is QB but AR is greater than AC which is QA. Hence the difference between AC and AR, that is AB shows profit per unit of output. The rectangle PABC represents total profit earned by the firm.

Not all firms will earn Supernormal profit. Some firms may earn normal profit and some firms may incur loss. This is shown below.

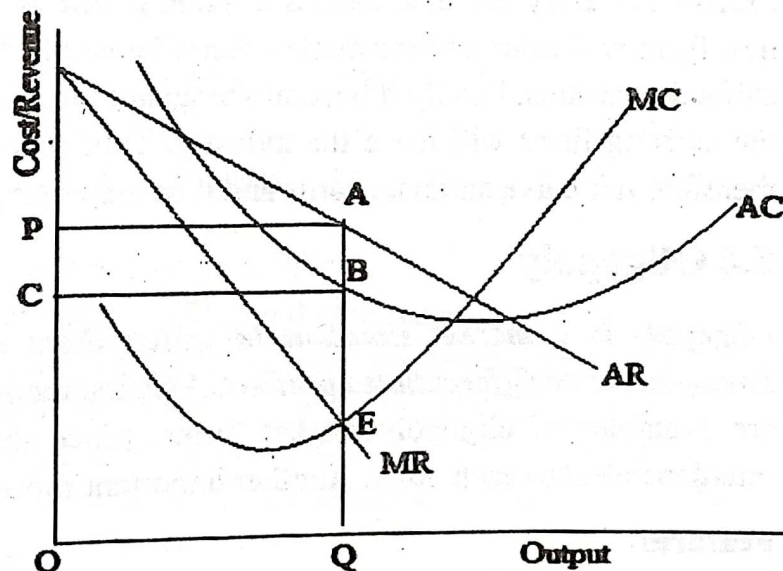


Fig 5.11 Equilibrium under Monopolistic competition

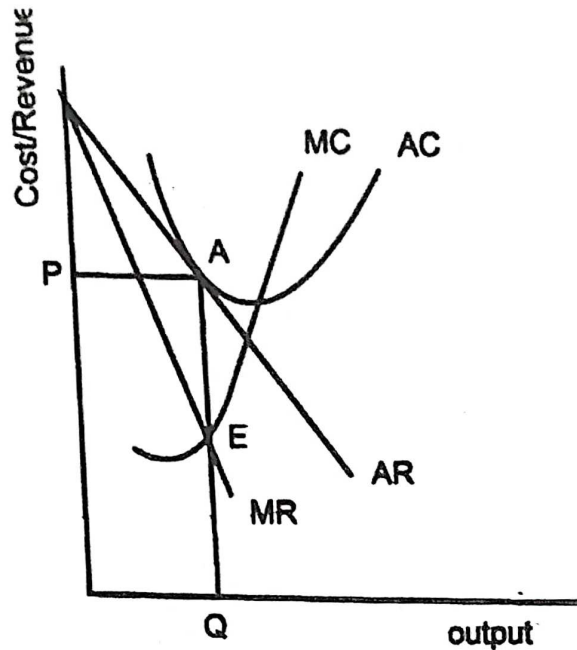


Fig 5.12 Normal profit

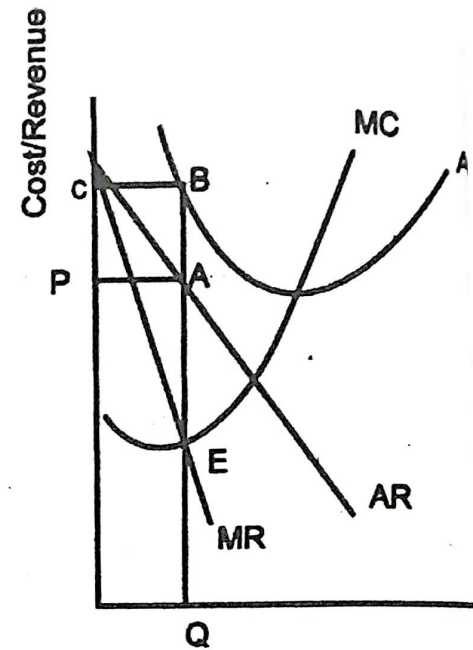


Fig 5.13 Loss

When a firm earn normal profit at $MC = MR$, AR curve will be tangent to the AC curve or $AR = AC$. This is shown fig. 5.12 where at point A, AR curve is tangent to the AC curve. When the firm incur a loss AC curve lies above the AR curve or $AC > AR$. In diagram (5.13) rectangle PABC shows the loss of the firm. When the firm produces output where $MC = MR$, loss is minimised.

Freedom of entry and exit ensures **normal profit in the long run**. If there is high profit, new firms will enter and the market share (demand) of the firm decreases and the AR curve shifts downwards. Finally it becomes tangent to the AC curve. When there is loss, the existing firms will leave the industry. Thus market share of the firm increases and therefore AR curve shifts upwards and it becomes tangent to the AC curve.

5.4 Oligopoly

Oligopoly is a market situation in which there are a few sellers selling homogenous or differentiated product. Aviation industry, telecommunication industry are examples of oligopoly market forms. Since there are only a few firms, they are interdependent to each other. Another important aspect of oligopoly is price rigidity.

Features

1. **Few sellers** – Under oligopoly a few sellers dominate the entire industry. The few sellers influence the price of each other.
2. **Homogenous or differentiated product** – In certain cases product is homogenous like product in perfect competition. Petrol is an example of homogenous product.

Market

of a situation. But in the case of certain other products it may be differentiated. Automobile industry is an example.

3. **Barriers to entry** – Even though there are no legal barriers, various economic barriers prevent the entry of new firms. Economic barriers may be in the form of huge investment requirement, strong consumer loyalty for existing brands or because of economies of scale enjoyed by the existing firms.
4. **Mutual Interdependence** – It implies that firms are influenced by each other's decision. The quantity sold by one firm depends on its own price and price of its competitors because the firms are producing either homogenous products or close substitutes.
5. **Existence of price rigidity** - It means that firms do not prefer to change the price of their product because it will not be beneficial for them. If one firm decreases the price others will also reduce price. Hence firm's product demand will not increase but at the same time it will affect their profitability. On the other hand if the firm increases the price others will not increase the price and hence it will lose its customers. Hence firms resort to non-price competition like advertisement and other forms of sales campaigning.
6. **Indeterminate Demand Curve** – This implies that the demand curve is unknown under oligopoly due to uncertain behaviour patterns of firms. Under oligopoly, every organization keeps an eye on the actions of rivals and makes strategies accordingly. Therefore, the demand under oligopoly is never stable and shifts in response to the actions of rivals.

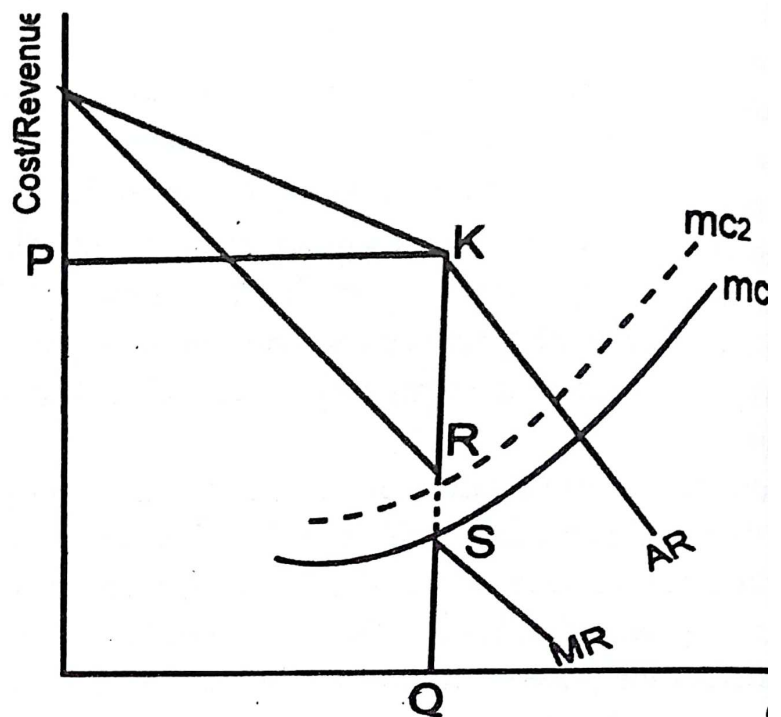
Price and output determination-Kinked demand curve model

The kinked demand curve model was developed by Paul M Sweezy in 1939. Kinked demand curve explains price rigidity under oligopoly on the basis of following assumptions.

- i. If a firm increases its price others will not follow.
- ii. If a firm decreases its price others will also do the same.

Usually in oligopoly firms will not enter into a price war and hence price remains rigid. If one firm decreases the price others will also reduce price. Hence firm's demand will not increase but at the same time it will affect their profitability. On the other hand if the firm increases the price others will not increase the price and hence it will lose its customers. Therefore a firm under oligopoly stick to its price.

This kind of behaviour in oligopoly was explained by the kinked demand curve. The lower part of the demand curve is less elastic because a firm cannot gain from a price cut. The upper part of the demand curve is more elastic because there will be a substantial fall in demand if there is a price hike. Thus, in the following diagram we can see that there is kink at point K in the d



This kink in the demand curve or AR curve at point K creates a discontinuity in the MR curve. At the kink MR remains unchanged between points S and R.

Marginal cost curve mc_1 intersect MR curve at point S and OQ is the equilibrium output. Suppose cost increases and MC curve shifts upwards as mc_2 there will be a change in equilibrium price and quantity till MC reaches the point R in the gap.

5.5 Collusive oligopoly

Under oligopoly firms are interdependent and face cut throat competition. *To avoid war and loss, firms enter into an agreement regarding uniform price and output. This agreement is known as collusion.* According to Samuelson, "Collusion denotes a situation in which two or more firms jointly set their prices or output, divide the market among themselves or make the business decisions".

Collusion helps the firms in preventing uncertainties, prevent the entry of new firms, strengthen the bargaining power of the firms against buyers. Collusion may be formal or tacit in nature. In formal collusion, there will be an explicit agreement among the firms. On the other hand, in tacit collusion firms collide in an informal way.

The most common form of explicit collusion is cartel. Cartel is an explicit or agreement between firms. This kind of collusion is possible when there are a few and the product is homogenous. OPEC is an example of a cartel. Under cartel firms i in price and output fixation, division of profit, market share etc. The main object cartel is reducing the supply and raising the price. Price and output under cart determined by a central administrative authority. The total profits are distribu proportion as decided among the members.

Market

Price leadership

Under collusion, sometimes the dominant firm in the industry sets the price and others follow it. The dominant firm becomes the price leader because of its large size, large economies of scale or better technology.

Barometric price leadership and aggressive price leadership also exist. Under barometric price leadership one firm change the price first and other firms follow it but that may not be the dominant firm. Like that in aggressive price leadership one aggressive firm sets the price first and others follow it.

Tacit collusion- Governments always take measures against the formation of cartels or formal agreements among the firms because such agreements are against the interest of the consumers. When firms enter into such agreements, they may act as a monopoly and charge a higher price. Therefore, firms enter into tacit collusion. In a tacit or implicit collusion firms do not form a cartel, but informally agree to charge the same price.

Non-Price Competition

Under oligopoly, there is very tight competition between the firms. If the firms try to increase their market share through price competition, it may result in a price war and hence the firms will be the losers. Hence, they resort to non-price competition to increase sales. Non-price competition refers to competition between companies that focuses on benefits, extra services, good workmanship, product quality etc.

Non-price competition is a marketing strategy that typically includes promotional expenditures such as sales staff, sales promotions, special offers, free gifts, coupons, and advertising. In other words, it means marketing a firm's brand and quality of products, rather than lowering prices.

There are two main branches of non-price competition. They are product differentiation and promotion or advertising. Product differentiation means differentiating the product with respect to packing, colour, smell, quality etc. This helps to attract more customers and to increase the market share. Promotion includes advertising, branding, public relations etc. Advertising can be informative or persuasive.

The following are some of the examples of non-price competition.

Loyalty card – Loyalty cards give 'rewards or money back to customers who build up points. Airlines, supermarkets etc. use loyalty cards to encourage customers to repeat.

Subsidized delivery - Big firms such as Amazon has been successful in offering free delivery for their customers, with a paid subscription. This would give customers an incentive to purchase more because of the waived delivery fee. This works especially well for customers who are regular online shoppers. Supermarkets also offer delivery services for their customers.

Offering good after-sales service: After-sales service is crucial for the reputation and brand loyalty of the firm. In order to retain customers, they would have to provide after-sales service.

Advertising/brand loyalty: Firms spend billions on advertising because repeated exposure to famous brands can make consumers more likely to buy such brands. High brand loyalty can also create barriers to entry.

Cultivation of good reviews: In an online world, good reviews are increasingly important. Therefore, firms have an incentive to encourage happy customers to leave reviews.

Coupons and free gifts: Some sellers provide coupons and free gifts along with a purchase. This encourages more customers to buy from that seller.

In short non-price competition increases the market share of a product. But it also increases the selling cost and other promotional expenses which in turn increases the average cost of production.

Comparison Between perfect competition, monopoly, monopolistic competition and oligopoly

Perfect Competition	Monopoly	Monopolistic Competition	Oligopoly
Large no. of buyers and sellers	Single Seller and Large number of buyers	Large number of buyers and sellers	Few sellers
Homogenous product	Single product without close substitutes	Differentiated Product	Homogenous or differentiated products
Freedom of entry and exit	Entry restricted	Freedom of entry and exit	Barriers to entry
No selling cost	No selling cost	Selling cost	Selling cost
Perfectly elastic demand curve	Downward sloping less elastic demand curve	Downward sloping more elastic demand curve	Indeterminate demand curve

Market

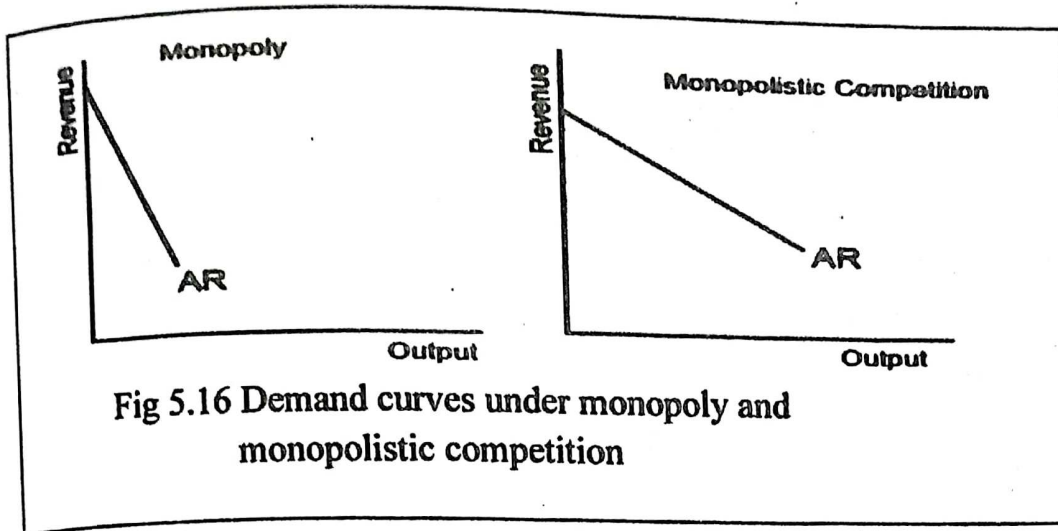


Fig 5.16 Demand curves under monopoly and monopolistic competition

5.6 Product Pricing

The right price of a product is one which keeps all participants of a market- consumers, sellers and shareholders- happy. A firm should decide its pricing strategy after considering the degree of competition in the market, price of competitors product, consumers buying capacity etc. Objective of the firm also play an important role in pricing decision because the objectives like profit maximisation and sales maximisation need different pricing strategies.

Another important factor which is to be considered in price fixation is cost of the product. This is the most important factor. Whenever there is a change in cost, the price of the product should be changed. Another factor which influences pricing policy is government policy regarding taxation and subsidy. Thus, it can be concluded that a change in anyone of the determinants of demand of a product necessitates a review of pricing policy. The following are the important pricing strategies.

Cost Plus or Markup Pricing

Under this strategy price is the sum of cost and a profit margin. Usually, average cost is used for this purpose. Therefore, it is also called Average Cost Pricing or Full Cost Pricing. Thus, the price will be

Price = $AC + m$ Where m is the percentage of markup. Markup is fixed arbitrarily and in many cases it is determined at 10 per cent. However, it may vary industry to industry and among the different firms in the same industry depending on the availability of substitutes, degree of competition etc. This method is very simple and convenient. However, one important limitation of this method is that it is not suitable when there is tough competition in the market or when there is the threat of entry of new firms.

Target Return Pricing

This method is similar to cost plus pricing. But the main difference is that cost plus pricing the profit margin is decided arbitrarily, whereas under this method producer decides the minimum rate of return. Even though the methodology of price determination is the same as the previous case, the margin is decided depending on the experience of the firm, consumer's paying capacity, risk involved and many other factors.

Penetration Pricing

When a firm wants to enter into a market which is already dominated by existing firms, the only option is charging a price less than the existing price. This price is called penetration price. Reliance has adopted this kind of a pricing strategy in the mobile phone market. This method of pricing can be adopted on a short-term basis and its success largely depends on price elasticity of demand.

Predatory Pricing

Under predatory pricing the predator, already a dominant firm, sets its prices too low for a sufficient period of time so that its competitors leave the market and others are deterred from entering. This kind of predation is done on the expectation that these present losses (or foregone profits) will be compensated by future gains. In other words, the firm has the expectation of acquiring exploitable market power after the predatory period. The future profits of this later period will be sufficiently large enough to compensate incurring losses or foregoing present profits. Predatory pricing usually will cause harm to consumers and is considered as anti-competitive. It violates competition laws, as it makes markets more vulnerable to a monopoly.

Going Rate Pricing

This is the strategy of following the prevailing market price instead of a separate pricing strategy of their own. Usually, in this case price is fixed by a dominant firm and others accept it. Going rate pricing strategy is adopted when the products sold by the firm have very close substitutes and their cross elasticity is very high. Packaged drinking water is an example. Besides, when new firms are not sure about the shift in demand in favour of their product, they also follow this pricing strategy. By adopting this pricing strategy firms can avoid price war like situation.

This kind of a pricing strategy is adopted when the product has reached maturity and become generic in nature. That is a buyer asks for a product in general rather than a particular brand. An example is mineral water.

Price Skimming

Market

It is a strategy in which high price is charged at the time of introduction of the product and a lower price during maturity. By experience producers know that a segment of high-income consumers wishes to become the first among those who possess the product. They use the product as a status symbol instead of considering its intrinsic value. Hence, the producers charge a very high price from such buyers to skim the market and earn a very high profit. Once the product is established and reached maturity, producers will reduce the profit margin and charge a lower price. This will attract the lower income group.

Administered Pricing

Generally, the term administered pricing is used to denote the price charged by the monopolists. Since, a monopolist is a price maker he can charge any price for his product. In other words, administered prices are not fixed by the market mechanism.

But in the Indian context, administered pricing means price is fixed statutorily by the government. During certain occasions government fixes the price of certain essential commodities on social interest. Price of cooking gas is an example.

Chapter 6

National Income

6.1 The Circular flow of Income

Economic transactions generate two types of flows i) Product flow or real flow money flow. In the economy products and money flow in opposite directions in a circular manner. This is called circular flow of income. Product flow includes flow of goods, services, and factor services.

When factors of production supply their factor services, they get factor income. This income is spent on various goods and services and expenditure flow. To illustrate the flows of income and expenditure, an economy is divided into four sectors- i) Household sector ii) Business sector or firms iii) government sector iv) Foreign sector.

Circular flow in a two sector model

In a simple two sector model the two sectors are households and firms. Households supply all factors of production. They supply these factor services to firms and get factor payments in the form of rent, interest, wages and profit. This income is spent for buying goods and services produced by firms.

Firms hire the factor services of households and produce various goods and services. These flows are depicted in the following diagram. This model is built on the basis of the assumption that the entire income received by the households is spent on goods and services. That is,

$Y \equiv FP \equiv V$ Where Y =household income, FP =factor payments, V =money value of

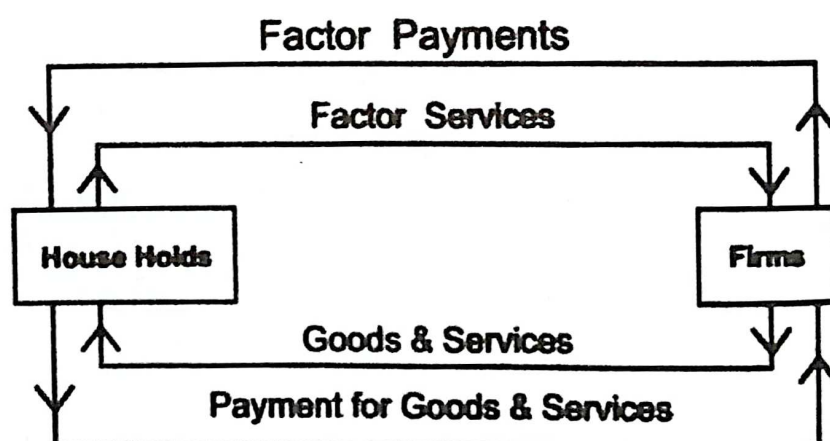


Fig 6.1 Circular flow in a simple two sector model

In the above diagram, upper part represents the factor market and the lower part represents the commodity market. In the factor market there is a flow of factor services from households to firms and factor payments from firms to households.

National Income

household sector to the firms. In return there is a flow of factor payments from firms to households. In the commodity market there is a flow of goods and services from the firms to household sector. In return there is a flow of payment for goods and services from household sector to the firms. Thus, the money flows and real flows are completed.

Two sector model with capital market

Households may not spend their entire income on goods and services. They may save a part of their income. Unspent income is a leakage from the economy. This saving is coming to the capital market. Firms borrow the savings of the households and they invest. Investment is an additional expenditure and it is an injection. When saving equals investment there will not be any problem in the economy. Two sector model with capital market is shown below.

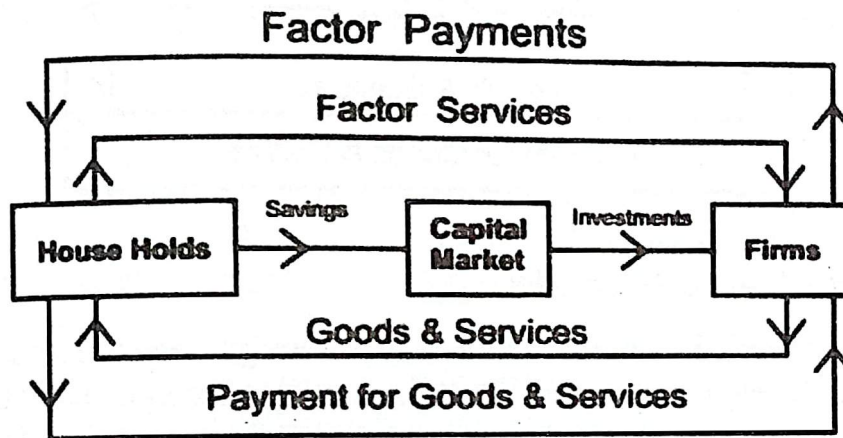


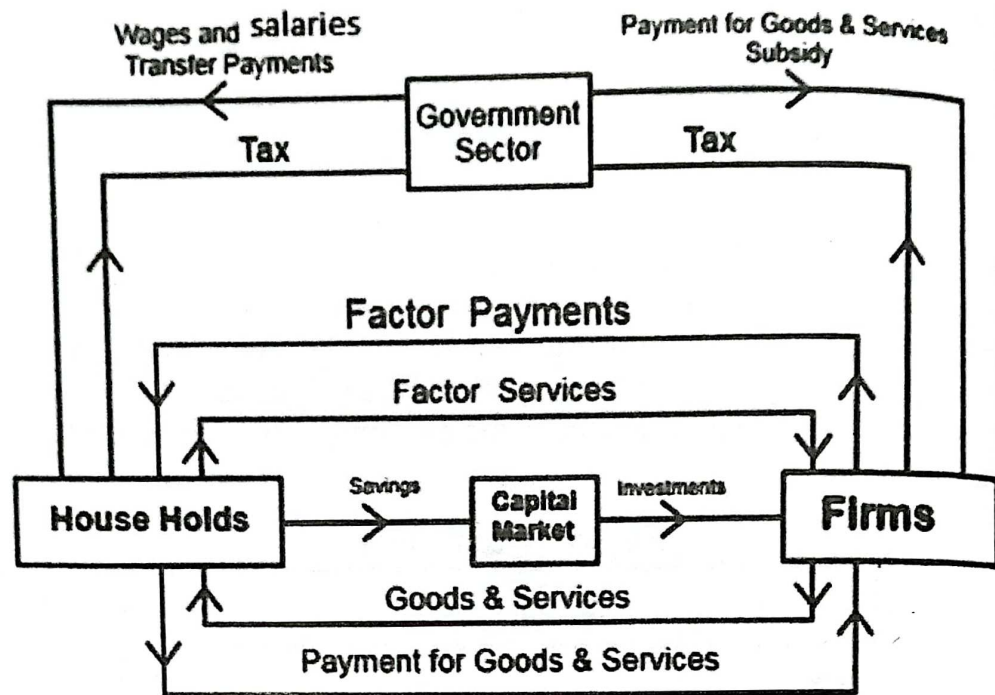
Fig. 6.2 Two sector model with capital market

Three sector model

In a three sector model the government sector is included. The household sector and the firms pay tax to the government. Tax is a leakage from the income stream. Like other two sectors government also spend money. Government expenditure is an injection. Government make payment to the firms for the purchase of goods and services. Further government also pay subsidies to the firms. Similarly, government make use of the manpower services of the households and pay wages and salaries as well as transfer payments in the form of welfare expenditure to the household sector. The following figure shows the circular flow in a three sector model. For convenience only money flows from and to the government are shown

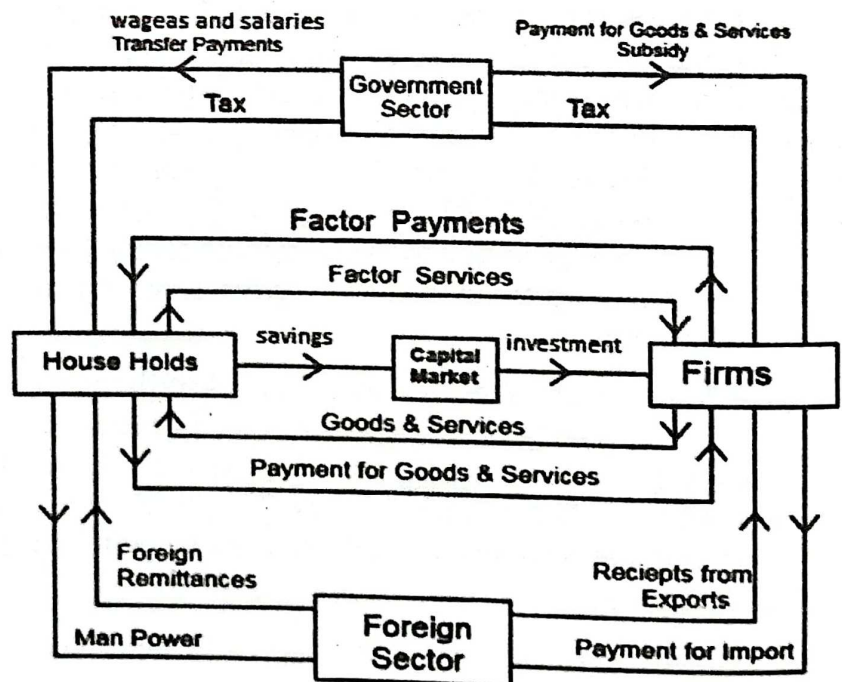
If the government expenditure equals taxes then there is no disturbances to the circular flow. This is the case of balanced budget. On the other hand if government expenditure is less than the taxes, then there is leakage and the size of the circular flow will be reduced. This is the case of surplus budget. But, when government expenditure is greater than taxes there is an injection into the economy and the circular flow will be expanded. This is the case of deficit budget.

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Circular flow in a four sector model

In a four sector model the fourth sector is the foreign sector. Households send manpower to the foreign sector and in return they get foreign remittances. Firms send their goods and services to the foreign sector and they get receipts from exports. At the same time firms import raw materials, and other inputs from the foreign sector and make payment for their imports. Export is an injection into the economy but leakage. The circular flow in a four sector model is shown in the following figure.



6.2 National Income

Factor income and Transfer income

Factor income is the income received for supplying a factor service. It can be in the form of rent, interest, wages or profit. When a factor payment is made either a product or service is produced. For estimating national income factor payments alone are taken into account.

On the other hand **transfer payments are unilateral or one sided payments.** They do not add anything to the current flow of goods and services. Donations to charity, unemployment allowance, old age pension, gifts etc. are examples of transfer payments. Tax is a compulsory transfer payment. Transfer payments are excluded from national income accounting.

Intermediate goods and final goods

Goods which are used in the production of other goods and services are called intermediate goods. They pass through further stages of production. Raw materials, fuel, electricity etc. are intermediate goods. Intermediate goods are not taken into account for national income estimation.

Goods which are ready for consumption or investment are called final goods. Consumer goods like dress, vehicles and electronics items, machinery etc. examples of final goods. They do not need further processing. They are finished products. The value of final goods are added for the estimation of national income.

Consumer goods and capital goods

Goods which are used for consumption purpose are called consumer goods. Food items, clothing, household electronics and electrical items etc. are examples of consumer goods. Consumer goods can be durable like TV, fridge etc., semi durable like dress, shoes etc. or none durable like food items.

Goods which are used to produce other goods and services are called capital goods. They are used for investment purpose. Machinery, equipment, building etc. are examples of capital goods. The economic growth of a country depends on the stock of capital goods.

National Income

National income can be defined differently. From the income side **it is the sum total of the factor incomes received by the residents of a country in the form of rent, interest, wages and profit over a period of one year.** From the output side it is the total money value of all final goods and services produced in an economy during an accounting year.

Gross Domestic Product at Market Price(GDP_{mp})

It is the money value of all final goods and services produced within the domestic territory of a country during a financial year. Money value is the price of the product. To

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estimate GDP money value of final goods alone are taken into account. Further of goods and services produced in the domestic territory alone will be taken into account. That is goods produced outside the country by its nationals will not be considered.

Net Domestic product at market price(NDP_{mp})

When depreciation is deducted from GDP we get NDP. Depreciation is the loss in value of capital assets due to wear and tear during production. That is

$NDP_{mp} = GDP_{mp} - \text{Depreciation}$. Therefore to find net value from any given gross value, depreciation is to be deducted.

Net National Product at market price (NNP_{mp})

GDP includes the money value of goods or income generated within the domestic territory only. But a nation also gets income from abroad. When net factor income from abroad (NFIA) is added to NDP we get NNP. Thus the difference between domestic product and net national product is NFIA. NFIA is the difference between factor incomes received from abroad and factor payments made to the rest of the world. For example every year a country receives factor income in the form of rent, interest, wages and profit from other countries. At the same time factor payments are made to other countries for making use of their services. The difference between these two is called NFIA.

$$NNP_{mp} = NDP_{mp} + NFIA$$

Net National Product at factor cost (NNP_{fc})

Market price includes indirect taxes and subsidies. When the effects of these are eliminated from the value of output we get the value of output at factor cost. To get the value at factor cost net indirect tax is to be deducted. Net indirect tax is the difference between indirect tax and subsidy.

$$NNP_{fc} = NNP_{mp} - \text{Net Indirect Tax (NIT)}$$

$$NIT = \text{Indirect Tax} - \text{Subsidy}$$

NNP_{fc} is the national income of a country.

Gross National Product (GNP)

GNP is the money value of all final goods and services produced in a country including factor income from abroad.

$$GNP = GDP + NFIA$$

Numerical example

From the data given below estimate GNP_{mp} , GNP_{fc} , NNP_{mp} and National income.

$$GDP_{mp} = 5000 \text{ (in 100 billion)}$$

$$NFIA = -50$$

National Income

Indirect Tax = 70

Subsidy = 20

Depreciation = 30

Answer

$$\text{GNPmp} = \text{GDPmp} + \text{NFIA}$$
$$= 5000 + -50 = 4950$$

$$\text{GNPfc} = \text{GNPmp} - \text{NIT}$$
$$= 4950 - (70 - 20) = 4900$$

$$\text{NNPmp} = \text{GNPmp} - \text{Depreciation (or GDPmp - Depreciation + NFIA)}$$
$$= 4950 - 30 = 4920$$

$$\text{National Income (NNPfc)} = \text{NNPmp} - \text{NIT}$$
$$= 4920 - (70 - 20) = 4870$$

Private Income

Private Income refers to income of non-governmental entities from all sources over a period of one accounting year. It represents income of firms and households from all possible sources.

$$\text{Private Income} = \text{NNP}_{\text{FC}} - \text{domestic product accruing to the government sector} + \text{transfer payments} + \text{Interest on public debt}$$

Personal Income

It is the income of the household sector from all sources before paying direct taxes in a financial year.

$$\text{Personal income (PI)} \equiv \text{National Income} - (\text{Corporate tax} + \text{Undistributed corporate profits} + \text{social security contributions}) + \text{Transfer payments} + \text{interest on public debt}$$

(Corporate tax is tax on profit of the companies)

Personal Disposable Income

It is defined as the part of personal income left for consumption and saving after the payment of taxes.

$$\text{Personal Disposable Income} = \text{Personal Income} - \text{Direct taxes}$$

Per capita income

It is the income per head. In other words it is the average income of the people of a country in one year. It is obtained by dividing national income by population.

$$\text{Per capita income} = \frac{\text{National Income}}{\text{Population}}$$

National Income at Current Prices and National Income at Constant Prices

In an economy without any increase in real output national income estimate may increase in national income. This is because of the increase in price of goods and services. Hence in every country national income is estimated at current prices and constant prices.

National income estimated according to the prices of goods and services prevailing in the current year (the year to which national income is estimated) is known as national income at current prices or nominal national income. From this we will not get a clear picture of the economy. Therefore, national income at constant prices is estimated.

National income estimated according to the prices of goods and services prevailing in the base year is known as national income at constant prices or real national income. If there is an increase in national income at constant prices it shows that there is growth in that country or the output has been increased. In India 2004-05 was taken as the base year for estimating national income at constant prices. But recently the base year has been changed to 2011-12. That is in India in every year national income will be estimated according to current year price and on the basis of prices of goods and services in the year 2011-12.

The Three Sectors of an Economy

Economic activities are classified under three sectors. They are primary, secondary and tertiary sectors.

Primary sector consists of activities related to the exploitation of natural resources. Main activities under primary sector are agriculture, mining and quarrying, fishing, animal husbandry, poultry farming etc.

Secondary sector is the manufacturing sector. Secondary sector includes registered and unregistered manufacturing.

Tertiary sector provides various services like health, education, banking, insurance, transport and communication, trade and commerce, hotels and restaurants etc.

In developed countries the tertiary sector contributes the largest share towards national income. Even though India is a developing country the largest share of its national income is contributed by the tertiary sector.

Stock and Flow

Stock is the quantity of a variable measured at a point of time. It has no time dimension. It is a static concept. Water in reservoir at a point of time is a stock. In economics land, capital etc. are stocks.

Flow is the quantity of a variable measured over a period of time. It has a time dimension. It may be a week, month, year etc. It is a dynamic concept. Water accumulated in the reservoir is a flow.

National Income

between a period of time is flow. Similarly cash in hand is stock but monthly income is flow. Saving, expenditure etc. are also examples of flow.

6.3 Measurement of National Income

There are three important methods of measuring national income. They are

1. Product method or output method
2. Final Expenditure method
3. Income method

Product method or Output method

Under this method GDP is estimated as the sum of the money value of all final goods and services produced in the domestic territory of a country during a financial year. We can arrive at national income once GDP is estimated. The following are the important steps involved in the estimation of GDP

- i) Identifying the production units and classifying them under respective industries and each industry under the corresponding sector.
- ii) Estimate the value of final output produced by each production unit, each industry and each sector. (Gross value of output of a production unit = $P \times Q$ where P is the price per unit and Q is the number of units of output produced in a year)

The sum of value of output produced by all the three sectors gives GDPmp. That is

$$\Sigma \text{GVOmp} = \text{GDPmp}$$

Once GDPmp is estimated we can derive NNPfc by deducting depreciation and net indirect tax and adding NFIA. NNPfc is the national income.

If total sales during a financial year is given along with opening stock of goods and closing stock, then

$$\text{GVOmp} = \text{Total sales} + \text{Change in stock}$$

$$\text{Change in stock} = \text{Closing stock} - \text{opening stock}$$

While using this method the value of goods produced for self consumption is also added.

However this method has the problem of double counting. Double counting means counting the value of a product more than once. This difficulty arises because final product of one firm becomes the intermediate product of another producer. Hence it is difficult to classify the goods as final product and intermediate product. Double counting leads to overestimation of national income. This problem can be solved by using the value added method.

Under the value added method instead of taking the value of output the gross value added by each production unit is estimated. Gross value added is the difference between the Gross

value of output and intermediate consumption. Intermediate consumption means value of intermediate goods used in the production of a commodity.

Gross Value Added at market price (GVAmP) = GVOpM - Intermediate Consumption

Net Value Added at market price = GVAmP - Depreciation

$\Sigma \text{GVAmP} = \text{GDPmp}$

Suppose a baker produces bread for Rs.1000 by using the inputs like milk, wheat, sugar etc. for Rs.600. Value added by baker is $1000 - 600 = 400$. If we add the value of bread as well as milk, sugar and wheat flour in national income estimation, double counting arises.

Final Expenditure Method

This method estimates GDP by adding the final expenditures in the economy. The major components of final expenditure are:

- i) **Private final consumption expenditure (C)** – This is mainly the expenditure of households on final goods and services to satisfy their wants. It mainly depends on their income.
- ii) **Investment Expenditure (I)** – This is the expenditure for acquiring capital assets. There are four major components of investment expenditure: a) Private investment by firms, b) Government investment or autonomous investment, c) Residential construction, and d) Inventory investment (Unsold stock of goods).
- iii) **Government consumption expenditure (G)** – Like households, the government spends money for purchase of consumer goods like stationery, petrol etc.
- iv) **Net exports (X-M)** – This is foreign expenditure. Foreigners spend money on our goods (export) and we purchase foreign goods (import). The difference between exports and imports is the net foreign expenditure.

When these four items are added we get GDPmp. That is

$$C + I + G + X - M = \text{GDPmp}$$

Once GDPmp is estimated we find NNPfc or national income.

Income Method

When production takes place, income is generated in the form of factor payments. When output worth Rs. 100 is produced, income equal to rupees 100 is generated in the economy as factor payments. Income method takes the sum of the factor incomes in the economy. Factor incomes are:

- i) **Rent (R)** – It is the income earned by the people who supply land and buildings for production.

National Income

ii) Interest (I) – It is the reward of capital. When money is borrowed for investment interest is paid as the reward.

iii) Wages (W)– It is the reward of those who supply labour power. It is also called compensation of employees.

iv) Profit (P)– Profit is the reward of entrepreneur. Entrepreneur is the person who combines the services of other factors of production, take risk and produce various goods and services.

Even though these are the four factor incomes one more item is added. That is the income of the self employed. The income of self employed people is a mixture of rent, interest, wages and profit and it cannot be separated. Therefore the fifth item is added as

v) Mixed income of the self employed.

When these five items are added we get NDP_{fc}.

$R + I + W + P + \text{Mixed income} = \text{NDP}_{fc}$ (If Gross profit is added then we get GDP_{fc} because Gross profit includes depreciation also)

$\text{NNP}_{fc} = \text{NDP}_{fc} + \text{NFIA}$

Since we are adding factor incomes net indirect tax is not taken into account. When NFIA is added to NDP_{fc} we get national income. *The sum of Rent, interest and profit is called operating surplus.*

Items excluded from national income estimation

The following transactions are not included in national income estimation

1. Buying and selling of shares and securities. These are only financial transaction. Nothing is produced because of these transactions.
2. Value of intermediate goods used.
3. Prize money from lottery.
4. All transfer payments.
5. Purchase and sale of second hand goods (value of these goods are included when it was purchased for the first time).
6. Income from illegal activities like smuggling, gambling etc.

Uses or significance of national income estimation

- To evaluate the performance of the economy over the years
- For economic planning and for the formulation of economic policies
- To understand the contribution of each sector towards national income
- To make comparison between the economic performance of two countries
- To measure the inequalities in the distribution of income

Difficulties in the measurement of national income

There are two types of difficulties in the measurement of national income, conceptual difficulties and statistical or practical difficulties. Conceptual difficulties are common to developed as well as developing countries. But practical difficulties are applicable to developing countries.

Conceptual difficulties

- 1. Service without remuneration-** Certain services such as service rendered by a wife is not included in national income because payments are not made. But, same services are supplied by a house-maid remuneration is paid and it is included in national income estimation.
- 2. Classification of goods as intermediate goods and final goods –** It is very difficult to classify certain goods as final goods and intermediate goods because the same good can be used as an intermediate good and final good. When milk is purchased by a housewife it is a final good but in a hotel it is an intermediate good.
- 3. Difficulty in estimating the value of output produced in the government sector**
Since the government provide public goods either at free of cost or at nominal price, it is very difficult to estimate their value.

Practical difficulties

- 1. Inadequacy of statistical data.** – In developing countries accurate and complete statistical data is not maintained.
- 2. Illiteracy of farmers-** Farming is the main activity in developing countries but many of the farmers are illiterate. Hence they do not keep proper accounts of their production.
- 3. Lack of occupational specialisation** – In developing countries people are unskilled and they earn their income from more than one occupation. Hence it is difficult to compute their income.
- 4. Production for self consumption-** In developing countries a major part of agricultural output is consumed by the farmers themselves. Hence its value is not estimated.
- 5. Existence of a non monetised sector** – In developing countries, in villages people make certain barter transactions.

Besides, black money, price changes etc. also pose problems to national income estimation.

Numerical example

From the data given below estimate national income according to value added method and income method.

National Income

	(Rs. Crores)
Gross Value of Output at market price	8000
Intermediate consumption	2000
Private consumption expenditure	3000
Investment expenditure	2000
Government expenditure	700
Exports	600
Imports	300
Wages and salaries	2000
Rent	500
Interest	500
Profit	1500
Depreciation	1000
Indirect tax	800
Subsidy	300
Net factor income from abroad	-500

Value Added Method

$$\text{GVAmP} = \text{GVOmp} - \text{Intermediate consumption}$$

$$= 8000 - 2000 = 6000$$

$$\text{Therefore GDPmp} = 6000$$

$$\text{NDPmp} = \text{GDPmp} - \text{Depreciation}$$

$$= 6000 - 1000 = 5000$$

$$\text{NNPmp} = \text{NDPmp} + \text{NFIA}$$

$$= 5000 + (-500) = 4500$$

$$\text{NNPfc} = \text{NNPmp} - \text{NIT}$$

$$= 4500 - (800 - 300) = 4000$$

$$\text{National Income} = \text{Rs. 4000 Crores}$$

Expenditure method

$$\text{GDPmp} = C + I + G + X - M$$

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$$= 3000+2000+700+(600-300) = 6000$$

$$\text{NDPmp} = \text{GDPmp} - \text{Depreciation}$$

$$= 6000-1000 = 5000$$

$$\text{NNPmp} = \text{NDPmp} + \text{NFIA}$$

$$= 5000+(-500) = 4500$$

$$\text{NNPfc} = \text{NNPmp} - \text{NIT}$$

$$= 4500-(800-300) = 4000$$

$$\text{National Income} = \text{Rs. 4000 Crores}$$

Income method

$$\text{NDPfc} = W+R+I+P$$

$$= 2000+500+500+1500 = 4500$$

$$\text{NNPfc} = \text{NDPfc} + \text{NFIA}$$

$$= 4500+(-500) = 4000$$

$$\text{National income} = \text{Rs. 4000 crores}$$

2) A bicycle manufacturing company in India produced and sold 100 bicycles at Rs.2500 per unit in the market. Out of this Rs.300 has gone to the government unit. The owner of this company is a foreigner and he got a profit of Rs.500 per bicycle. The entire profit has gone to the country to which he belongs. Because of the production of 100 bicycles there was a depreciation of Rs.20,000 to the company. How much is the contribution of this company to GDPmp as well as national income of India?

$$\text{Gross value of output at market price} = \text{Price} * \text{Quantity} = 2500*100 = 2,50,000$$

$$\text{Therefore contribution to GDPmp} = \text{Rs.2,50,000/-}$$

$$\text{Contribution to national income} = \text{Contribution to GDPmp} - \text{Depreciation} + \text{NFI}$$

(As Profit is going out of the country contribution to NFIA is negative)

$$= 250000 - 20000 + (-500*100) - 300*100$$

$$= \text{Rs.1,50,000/-}$$

Chapter 7

Inflation

7.2 Inflation- Meaning and Types

Inflation is a situation in which there is a persistent rise in the general price level. In other words it is a situation in which there is an upward movement in the average level of prices. According to Coulborn it is a situation in which "too much money chasing too few goods. That is the availability of goods is less when compared to the supply of money. When there is inflation value of money decreases persistently. Value of money is the purchasing power of money or the quantity of goods and services that a unit of money can purchase.

There are several types of inflation which are classified on different basis. Based on the rate, inflation can be classified as Creeping, Walking, Running and Galloping Inflation.

(a) **Creeping Inflation:** When the rise in prices is very slow, that is less than 3% per annum, it is called creeping inflation. It is mild inflation and it is considered as good for economic growth.

(b) **Walking Inflation:** When prices rise moderately and the annual inflation rate is 3% to 10%, it is called walking inflation. Inflation at this rate is a warning signal for the government.

(c) **Running Inflation:** When prices rise rapidly and the rate of increase is 10% to 20% per annum, it is called running inflation. Its control requires strong monetary and fiscal measures and it is a dangerous situation.

(d) **Galloping or Hyperinflation:** When price rises between 20% to 100% per annum or even more, it is called galloping or hyperinflation. Such a situation brings a total collapse of the monetary system because of the continuous fall in the purchasing power of money.

Demand Pull Inflation and Cost Push Inflation

Demand pull inflation is the result of an increase in aggregate demand in the absence of an increase in aggregate supply or a relatively less increase in aggregate supply. Suppose the government is following an expansionary fiscal policy and the government spend more money in the field of education, health etc. by printing more currency notes. In this situation there will be a sudden increase in aggregate demand in the economy but the aggregate supply will not increase to that extent. Therefor the price level goes up. Once the economy

reaches in full employment level any further increase in aggregate demand will lead to price rise without any increase in output. This can be explained with the help of the following diagram.

In the diagram, AD is the aggregate demand curve, AS is the aggregate supply curve. Initially the economy is in equilibrium at point E. Y is the equilibrium level of output and P is the price level. When aggregate demand increases AD curve shifts upwards and the new AD curve is AD₁ which intersects the AS curve at point E₁. Here price level increases to P₁ and there is an increase in output from Y to Y_F. Beyond the Y_F level of output AS curve becomes perfectly inelastic. That is the output cannot be increased beyond this level of output. Y_F is the full employment level of output. Any increase in aggregate demand beyond this level will push the price up without any change in output. The theory of demand inflation is associated with the name of J M Keynes.

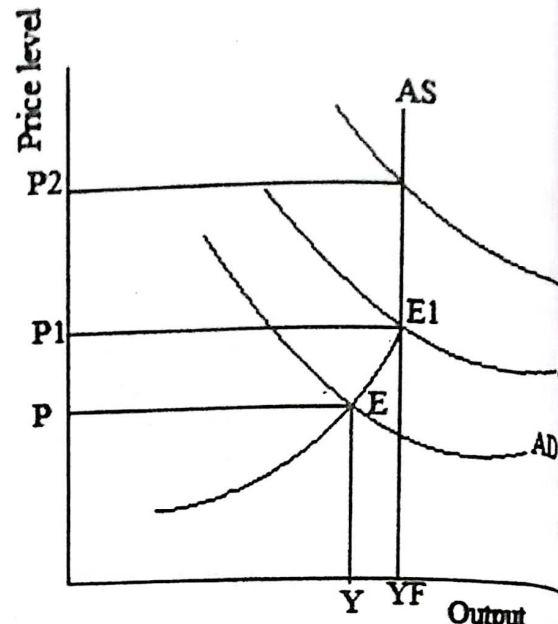


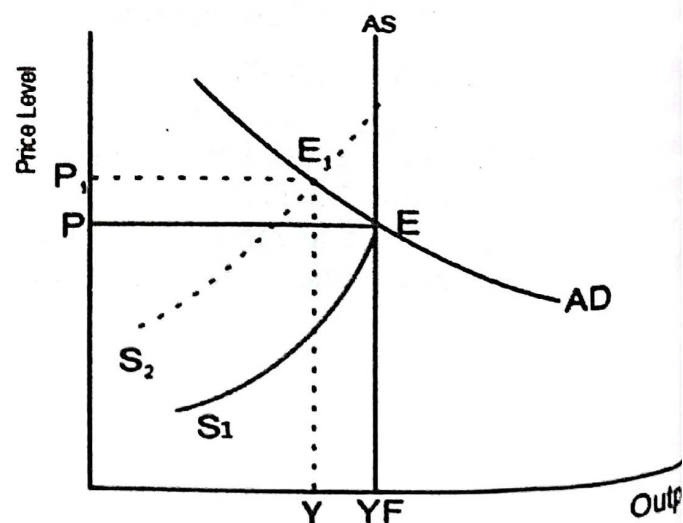
Fig. 7.1 Demand Pull Inflation

Cost push inflation is the result of increase in cost of production. Cost of production increases mainly due to increase in wages, increase in profit margin, or due to a supply shock which means a sudden fall in supply. Increase in cost of production decreases supply and when supply decreases, supply curve shifts leftwards. Therefore the price goes up. This is shown in the diagram.

In the diagram initially the economy is in equilibrium at point E where the aggregate supply curve AS₁

Fig.7.2 cost push inflation

intersects the AD curve. This is full employment equilibrium where output is Y_F and P is the price level. When aggregate supply decreases the AS curve shifts leftwards and the new supply curve is AS₂ which intersects the AD curve at E₁. Therefore the price level goes up to P₁ and output decreases to Y.



Theories of Money and Inflation

Measurement of inflation

Inflation is measured by calculating the changes to price index numbers (PINs) over a period of time. Rate of inflation is the percentage rate of change in the price index for a given period of time.

$$\text{Rate of inflation} = \frac{\text{PIN}_t - \text{PIN}_{t-1}}{\text{PIN}_{t-1}} * 100$$

Where PIN_t = Price index number for year t

PIN_{t-1} = Price index number for year t-1

Price index measures the average change in the price of goods and services over a period of time. It can be consumer price index or whole sale price index.

Causes of Inflation

Causes of inflation can be classified under demand side causes and supply side causes.

Demand side causes

In an economy when aggregate demand increases without an equivalent increase in aggregate supply, there will be excess demand and the price level goes up. This leads to demand pull inflation. The following are the important causes of demand pull inflation.

- i) **Increase in money supply**—This is the most important reason for inflation. When the monetary authority increases the money supply, cash in hand with the people increases and hence they spend more money. Thus aggregate demand increases.
- ii) **Increase in disposable income**— Disposable income increases due to an increase in per capita income or reduction in taxes. Increase in disposable income also increases cash in hand with the people and aggregate spending.
- iii) **Increase in government expenditure** — When the government follow an expansionary fiscal policy government expenditure will increase and as a result demand for goods and services also increase.
- iv) **Deficit financing** — It means government spends more money than its revenue. The deficit may be met by printing more currency notes. This also increases money supply as well as total spending in the economy.
- v) **Cheap money Policy** — If the interest rates are low in the economy incentives to save will be less. Hence people spend more money and thus aggregate demand increases.
- vi) **Increase in population** — When population increases the number of buyers also increases and thus aggregate demand increases.

Supply side causes

When aggregate demand increases and aggregate supply does not keep up with aggregate demand, cost push inflation will be the result. There are different reasons for inadequate aggregate supply.

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- i) **Shortage of capital and other complementary factors** – To increase production aggregate supply more capital and other complementary factors like raw materials, electricity etc. are needed. When there is a shortage of such factors there will be a decrease in aggregate supply and as a result price level goes up.
- ii) **Increase in wages** – When wage rate increases cost of production also increases, result supply falls and price level goes up.
- iii) **Speculative hoarding** – When traders hoard goods and create artificial scarcity for more profit, price will increase.
- iv) **Natural calamities** – Natural calamities like drought, earthquake etc. reduce production and aggregate supply.
- v) **Increase in exports** – When exports increase availability of goods in the domestic market decreases.
- vi) **Industrial disputes** – Industrial disputes will affect industrial production and aggregate supply.

Effects of Inflation

Effects of inflation can be studied under

1. Effects on distribution of income
2. Effects on investment and production
3. Social and political effects.

1. Effects on distribution of income and wealth- The effects of inflation on distribution of income and wealth can be viewed as the effects on fixed income group and flexible income group. When there is inflation the poor and the middle class whose income is relatively fixed will lose but the flexible income group categories business industrialists, traders, real estate holders and speculators gain and the income distribution changes in favour of them. These categories are analysed one by one.

a) Debtors and Creditors- During inflation, debtors gain and creditors lose. Because inflation value of money decreases and therefore people who lend their money, when they get it back its value will be less and they can purchase only less amount of goods and services.

b) Salaried classes and wage earners – Since the income of these two groups will not rise with inflation very slowly they will lose when there is inflation.

c) Investors – Those who invest in shares will gain because companies will make more profit when there is inflation. On the other hand those who invest in bonds and debentures which carry fixed returns will lose.

d) Businessmen – Since price goes up business people get more profit and they gain during inflation.

e) Farmers – When there is inflation price of agricultural product increases at a faster rate. Hence farmers get more income.

Theories of Money and Inflation

2. Effects on investment and production – When there is inflation people will have tendency to spend more and save less. Hence there will be less savings and less investment in the economy which will adversely affect production. Inflation also discourages foreign investment.

However in the initial stages, producers and traders get more profit because of price rise. Hence they produce their maximum and thus production goes up. But later, inflation increases wage rate and price of raw materials. Hence cost of production increases and as a result output may decrease.

Besides inflation may lead to misallocation of resources because producers will divert their resources from the production of essential commodities to those goods which gives them maximum profit. Another adverse impact of inflation is black marketing. Traders may hoard stock of goods to create artificial scarcity to make more profit by selling it at a higher price.

3. Social and Political impact - Inflation makes the rich richer and the poor poorer. Hence people will be unhappy. Because of the rising cost of living, workers resort to strikes which lead to loss in production. To make more profits, people resort to hoarding, black marketing, adulteration, manufacture of substandard commodities, speculation, etc. Corruption spreads in every walk of life. All this reduces the efficiency of the economy. Thus there will be social unrest in the economy.

If hyperinflation persists and the value of money continues to fall, it ultimately leads to the collapse of the monetary system. Further, rising prices also encourage agitations and protests by political parties opposed to the government. This may lead to the downfall of the government.

Measures to control inflation

There are three important ways in which inflation can be controlled.

1. Monetary policy measures
2. Fiscal policy measures
3. Other measures

1. Monetary policy measures

These are the measures adopted by the central bank of a country to control credit and money supply in an economy. Price stability and economic growth are the two main objectives of monetary policy. Monetary policy measures can be classified as

- a) Quantitative credit control measures
- b) Selective or qualitative credit control measures

Quantitative credit control measures

Quantitative controls aim at regulating the overall volume of bank credit, without considering purpose for which credit is used. The important quantitative measures are

- 1) **Bank Rate Policy** – *The Bank rate is the rate at which the central Bank rediscount approved bills of exchange.* According to RBI, it is the rate at which bills of exchanges and commercial papers are rediscounted or bought. During inflation, the central bank raises

the bank rate due to which the cost of borrowing goes up. As a result, commercial banks borrow less money from the central bank. With the reduced borrowings from the central bank, the flow of money from the commercial bank to the public decreases.

Further, as the central bank raises the interest rate, the commercial banks also raise the lending rate to the public, thereby making the borrowings costlier. Hence people take fewer loans from the commercial banks and spend less money. This helps to reduce money supply as well as aggregate demand in the economy.

Higher rate of interest creates an adverse environment for business activities and hence business activities contracted. Similarly, higher rate of interest is an incentive to save more and spend less. All such changes in the economy because of a higher rate of interest reduce the total spending as well as aggregate demand in the economy.

Increase in bank rate is called dear money policy and decrease in bank rate is called cheap money policy. When bank rate is increased cost of borrowing increases and hence money becomes dearer and when it is decreased money becomes cheaper.

ii) **Reserve Ratio**—Depending upon the economic conditions central bank increases or decreases the reserves that every commercial bank should keep in the central bank. There are two types of reserve ratios:

Cash Reserve Ratio(CRR)—*Every commercial bank should keep a certain percentage of their total deposits(net demand and time deposits) in the central bank in the form of cash reserve. This is mandatory and this percentage is called CRR.* According to RBI it is the average daily balance that a commercial bank is required to maintain with the RBI as a percentage of its total deposits. When there is inflation the central bank increases the CRR. This reduces the availability of cash with the commercial banks and their lending capacity decreases. Hence people get less money in the form of loans from the commercial bank and it helps to control inflation.

Statutory liquidity ratio (SLR) – This is another type of reserve that every commercial bank should keep. *A commercial bank should keep a certain percentage of their total deposits in the form of safe and liquid assets such as unencumbered government securities, cash and gold.* When there is inflation SLR is increased and it helps to decrease bank credit and to ensure solvency of commercial banks. Increase in SLR compels commercial banks to invest in government securities. While reserves under CRR are kept in the Central Bank, under SLR it is kept in the commercial bank itself. Further, while CRR is cash reserves, SLR can be in the form of cash, gold or securities. When CRR regulates the flow of money in the economy, SLR ensures the solvency of the banks.

iii) **Open Market Operations** —*Open market operations means the sale and purchase of government securities and bonds by the central bank.* When there is inflation the government securities are sold via commercial banks to the public such that a certain amount of bank deposits is transferred to the central bank as the public purchases government securities. As a result, the credit creation capacity of the commercial bank reduces.

Theories of Money and Inflation

Selective or Qualitative credit control measures

Under this method, extension of credit to essential purposes is encouraged and to non-essential purposes is discouraged. Hence these methods not only prevent the flow of credit into undesirable channels but also direct the flow of credit to useful channels. The important selective credit control measures are

i) **Margin Requirements** - Margin means that proportion of the value of security against which loan is not given. In other words 'Margin' refers to the difference between market value of securities and the amount of loan granted against these securities. For productive purposes margin requirements will be less.

ii) **Regulation of Consumer Credit** - Under this method the central bank lay down terms and conditions for the proper regulation of consumer credit given by the commercial banks of a country. Regulation of consumer credit restricts the amount of credit that might be given by commercial banks, restricts the time that might be available for repaying the loan, fixing the down payments etc.

iii) **Moral suasion** - These are the informal request by the central bank to commercial banks to contract credit in times of inflation and to expand credit in times of depression. The central bank issues periodical letters to commercial banks and discussions are held with authorities of commercial banks in this respect.

iv) **Direct action** - Central bank take direct action against erring banks. It may involve refusal by the central bank to rediscount bills or cancellation of license.

2. Fiscal Policy measures

These are the measures taken by the government to control the aggregate demand in the economy. The main instruments of fiscal policy are i) public revenue ii) Public expenditure iii) Public borrowing

i) **Public revenue** - The main source of public revenue is tax. When there is inflation the government want to reduce the total spending in the economy and hence tax is increased. Increase in direct taxes decreases the disposable income of the people and hence they spend less money.

ii) **Public expenditure** - During inflation the government cut down its expenditure on developmental activities and welfare programmes. This reduces government demand for goods and services as well as private income. When the government spend less money, income of the individuals decreases. Hence aggregate demand decreases.

iii) **Public borrowing** - When there is inflation the government will delay the repayment of public debt. At the same time the government should borrow more money from the public.

3. Other measures

Other measures include the measures taken by the government to increase the supply of goods and services, price control, wage control etc.

- i) **Increasing the supply of goods and services** – When there is price rise government takes various measures to increase the supply of goods and services. This can be done by importing essential products, banning the export of such items and by encouraging production of essential commodities.
- ii) **Price control** – Direct measures can be taken to control the price of goods and services. Essential commodities can be distributed through the public distribution system at regulated prices.
- iii) **Wage control** – Wage control helps to prevent the escalation of cost of production during inflation and thus cost push inflation can be controlled.

Repo rate and Reverse repo rate

Repo rate is the rate at which RBI provides overnight liquidity to banks against collateral of government and other approved securities. In other words, it is the rate at which RBI lends short term funds to commercial banks when they are facing a financial crunch. In this case, a repurchasing agreement is signed by both the parties stating that the securities will be repurchased by the commercial banks on a later date at a predetermined price.

Bank rate and repo rate are not the same. In general, repo rate focuses on providing funds to banks for a very short period whereas bank rate focuses on long term fund requirements of the commercial banks. In the case of bank rate there is no repurchasing agreement signed and bank rate is usually higher than Repo Rate.

Reverse repo is the rate at which the RBI absorbs liquidity on an overnight basis from commercial banks. In other words, when a commercial bank has excess funds, they deposit the same in central bank and earn interest in the form of reverse repo rate. Reserve bank uses this tool when it feels that there is too much money floating in the banking system. An increase in the reverse repo rate means that the banks will get a higher rate of interest from RBI. As a result, banks prefer to deposit their money to central bank.

Repo rate and reverse repo rates are also used to control money supply in the economy. When there is excess money supply in the economy these two rates are increased.

As on 12 February 2024 the important monetary rates in India are as follows

Bank rate	-	6.75 %
CRR	-	4.50 %
SLR	-	18 %
Repo rate	-	6.5%
Reverse repo rate	-	3.35 %

Chapter 8

Business Financing

2.1 Sources of Capital

Companies raise funds from domestic sources and foreign sources. The important domestic sources are

Internal Self-Finance:

An important source is the saving of the unit itself. It may be the household, the business or the government.

Households save as well as invest and lend its surplus to other units via, financial institutions like banks, capital market etc. The savings of the business includes depreciation and the retained earnings. When it is not adequate it borrows from financial institutions. The government also finances a part of their investment from internally generated funds. These arise from the excess of tax and other income over consumption spending plus transfers.

An advantage of investment through internally generated funds is that it combines the acts of saving and investment. It helps to reduce the cost of borrowing.

Equity, Debentures and Bonds:

A large part of finance for fixed investments [building, machines, etc.] comes from different types of equity or shares. These shares bear risks of different degrees and cater to the needs of different investors. The latest trend is to issue shares in small denominations of ten rupees so as to enable the largest number of people to participate in providing long-term finance.

Companies also get long-term finance through the issues of debentures and bonds. These are debt (loans) instruments. The buyers of those debentures and bonds are the creditors of companies. They get a fixed rate of interest on the money invested in these securities.

i) Public Deposits:

Another source is public deposits. It is also a debt-instrument, mostly for short-term finance. Under this system, people keep their money as deposit with these companies or managing authorities for a period of six months, a year, two years, three years or so. Depositors receive a fixed interest. This money is used by companies to meet their needs for working capital. However, this source of finance is unreliable because depositors can ask refund at any time.

ii) Loans from Banks:

Commercial banks also provide funds for meeting short-term needs or for working capital. Loans are given against the guarantee of government securities and stocks with companies. Loans are advanced in the form of overdraft and credit limit. Also commercial banks

purchase debentures issued by the companies. They can earn fixed interest investment and at the time of need they can sell these debentures in the market and their money.

v) Indigenous Bankers:

Indigenous bankers also advance financial help to a few large-scale industries, particularly during the time of stress, both for fixed capital and working capital. But mainly they provided finance to small scale industries. These banks charge a very heavy rate of interest, thus making finance a costly affair.

vi) Development Finance Institutions:

Development finance institutions cater to the needs of large and small industries. The institutions supplying industrial finance are Industrial Development Bank of India, Industrial Finance Corporation of India, Industrial Reconstruction Bank of India, Financial Corporations, and State Industrial Development Corporations. These institutions provide huge quantity of finances for setting up of new industries, for meeting their needs and in several forms.

Shares and Bonds

When companies want to raise capital, they can issue Shares or bonds.

A share is a stake in the ownership of a company. It is a security that is also sometimes referred to as an equity. When a company issues shares, they are selling a certain amount of ownership in their company. An investor who buys the shares has a claim to the company's earnings and assets.

Some companies pay out a percentage of profits to investors in the form of dividends. However, companies are not obliged to pay dividends and they are not certain. Over time, dividends can be increased, decreased or not declared at all.

When more shares are issued, future earnings must be shared among a larger number of investors. More shares can cause a decrease in earnings per share (EPS), putting less money in owners' pockets. EPS is also one of the indicators that investors look at when evaluating a firm's health. A declining EPS number is generally viewed as an unfavorable development.

Shares are perpetual investments and they do not have a specific maturity period. The attractive feature of stock issuance is that the money does not need to be repaid.

Bonds are a loan agreement that a company enters into with the investor. By buying a bond, an investor is lending money to a company for a pre-agreed period of time. For its part, the company agrees to pay back the money lent by the investor on a fixed date and to make regular interest payments during the period of the loan or in bulk at the time of maturity. When the bond reaches its maturity date, the company repays the investor.

Business Financing

Like shares, bonds are temporary investments which have fixed lifecycles. Although the stages of the lifecycle may vary from bond to bond, the stages are the same from issue to maturity. Bond financing is often less expensive than equity.

Bond issuance enables corporations to attract a large number of lenders in an efficient manner. Record keeping is simple because all bondholders get the same deal. For any given bond, they all have the same interest rate and maturity date.

The following are the major differences between shares and bonds

Bonds	Shares
The investor lends money to the company	The investor owns part of the company
The Issuers of bonds are Govt. institutions, financial institutions, companies, etc.	Shares are issued by corporate enterprises
Risk is relatively low	Risk is very high
Bond holders get Interest, as a fixed payment	Shareholders get dividend, which is not guaranteed
Return is certain	Return is uncertain
As bondholders have a higher claim on assets, investors may still recover some of their initial capital	When a company is declared bankrupt Stocks will become worthless and investors may lose 100% of their capital
The capital is paid back in full to the investor at maturity	The amount of capital the investor gets back depends on the share price when the stocks are sold.
Maturity period is fixed	No maturity period for shares

Money market and Capital market

A financial market deals with financial assets such as stocks, bonds, treasury currencies etc. The two important components of a financial market are money market and capital market.

Money market

Money market deals with short term financial assets, that is, assets up to a period of one year. The important instruments used in the money markets are collateral loans, bills of exchange, treasury bills, certificate of deposits etc. Institutions operating in money markets are central banks, commercial banks and acceptance houses etc.

Money markets provide a variety of services for individuals, corporates and government entities. Liquidity is often the main purpose for accessing money markets because short term debts are issued for the purpose of covering operating expenses or working capital of a company or government. The money market plays a crucial role in ensuring corporates and governments to maintain the appropriate level of liquidity.

Money Market is an unsystematic market, and so the trading is done off the exchange Over The Counter between two parties by using phones, email, fax, online, etc. It plays a major role in the circulation of short-term funds in the economy. It helps the industries fulfil their working capital requirement.

Functions of money market

The following are the important functions performed by the money market.

1. **Financing trade** - Money market finance internal and international trade. Finance made available to the traders through bills of exchange, which are discounted by the market. The acceptance houses and discount markets help the traders in this process.
2. **Financing Industry** - Money market contributes to the growth of industries. The market helps the industries in securing short-term loans to meet their working requirements through the system of finance bills, commercial papers, etc.
3. **Profitable Investment** - Money market enables the commercial banks and financial institutions to invest their excess reserves in profitable way. Money market provides the opportunity to invest surplus funds in short term assets which are highly liquid.
4. **Financial Mobility** - By facilitating the transfer of funds from one sector to another, money market helps in financial mobility. Mobility in the flow of funds is essential for the development of commerce and industry in an economy.
5. **Equilibrium between Demand and Supply of Funds** - The money market maintains equilibrium between the demand and supply of loanable funds.
6. **Economic growth** - Since money market helps in the development of trade, industry and agriculture, it promotes overall economic growth.

Capital Market

A capital market deals with long term financial assets. In other words a *capital market is a financial market in which long-term financial assets are bought and sold*. Capital markets channel the wealth of savers to those who can put it to long-term productive use, such as companies or governments making long-term investment. The instruments which are traded in a capital market includes stocks, bonds, debentures etc. whose maturity period is not limited up to one year or sometimes the securities are irredeemable (no maturity). The Capital Market works under full control of Securities and Exchange Board to protect the interest of the investors. Capital markets are risky markets and are not usually used to invest short-term funds.

A capital market is broadly divided into two major categories: Primary Market and Secondary Market. A market where fresh securities are offered to the public for subscription is known as Primary Market where as a market where already issued securities are traded among investors is known as Secondary Market.

Functions of capital market

1. **Allocative function-** The capital market functions as a link between savers and investors. It plays an important role in mobilising the savings and diverting them in productive investment. In this way, capital market plays a vital role in transferring the financial resources from surplus and wasteful areas to deficit and productive areas, thus increasing the productivity and prosperity of the country.

2. **Encourages Saving-** With the development of capital, market, the banking and non-banking institutions provide facilities, which encourage people to save more.

3. **Encourages Investment -** The capital market facilitates lending to the businessmen and the government and thus encourages investment. It provides facilities through banks and nonbank financial institutions. Various financial assets, e.g., shares, securities, bonds, etc., induce savers to lend to the government or invest in industry. With the development of financial institutions, capital becomes more mobile, interest rate falls and investment increases.

4. **Promotes Economic Growth-** Various institutions of the capital market, like nonbank financial intermediaries, allocate the resources rationally in accordance with the development needs of the country. The proper allocation of resources results in the expansion of trade and industry in both public and private sectors, thus promoting balanced economic growth in the country.

5. **Indicative Function-** A Capital Market acts as a barometer showing not only the progress of a company but also of the economy as a whole through share price movements.

6. **Liquidity function -** In a developed capital market, securities can be purchased and sold without any delay and hence it ensures liquidity in the economy.

Differences between Money Market and Capital Market

Following are the important difference between money market and capital market

Industrial Economics and Foreign Trade

1. The place where short-term marketable securities are traded is known as Money Market where as in Capital Market, long-term securities are created and traded. Capital Market is well organised which Money Market lacks.
2. The instruments traded in money market carry low risk, hence, they are safe investments, but capital market instruments carry high risk.
3. The major institutions that work in money market are the central bank, commercial banks, non-financial institutions and acceptance houses. On the contrary, the major institutions which operate in the capital market are stock exchange, commercial bank, non-bank financial institutions etc.
4. Money market fully fills short term credit requirements of the companies by providing working capital to them. As against this, the capital market tends to fill long term credit requirements of the companies, like providing fixed capital to purchase building or machinery.
5. Capital Market Instruments give higher returns as compared to money market instruments.
6. Maturity of Money Market instruments is one year or less, but Capital Market instruments have a life of more than a year as well as some of them are irredeemable in nature.
7. Money market is unsystematic in nature where as a capital market is systematic in nature.
8. While money market helps to increase the liquidity in the economy capital helps mobilisation of savings in the economy.

Stock market

The stock market refers to the collection of markets and exchanges where regular activity of buying, selling, and issuance of shares of publicly held companies take place. According to the Securities Contracts (Regulation) Act, 1956, "Stock Exchange means an association or organization or body of individuals whether incorporated or not, constituted for the purpose of assisting, regulating, or controlling the business of buying, selling or dealing in securities. In short, stock market is an institution which provides a platform for buying and selling of existing securities. While both terms - stock market and stock exchange are used interchangeably, the latter term is generally a subset of the former. If one says he trades in the stock market, it means that he buys and sells shares/equities on one (or more) of the stock exchange(s) that are part of the overall stock market.

While today it is possible to purchase almost everything online, there is usually a designated market for every commodity. A stock market is a similar designated market for trading various kinds of securities in a controlled, secure and managed environment. In the stock market brings together hundreds of thousands of market participants who buy and sell shares, it ensures fair pricing practices and transparency in transactions.

As a primary market, the stock market allows companies to issue and sell their shares to the common public for the first time through the process of initial public offerings (IPO). This activity helps companies raise necessary capital from investors. A listed company may also offer new, additional shares through other offerings at a later stage. Following the first-time share issuance called the listing process, the stock exchange also serves as the trading platform that facilitates regular buying and selling of the listed shares. This constitutes the secondary market. As almost all major stock markets across the globe now operate electronically, the exchange maintains trading systems that efficiently manage the buy and sell orders from various market participants.

The following are some of the important functions of stock market.

- **Providing Liquidity and Marketability to Existing Securities:** The basic function of a stock market is the creation of a continuous market where securities are bought and sold. It gives investors the chance to disinvest and reinvest. This provides both liquidity and easy marketability to already existing securities in the market.
- **Pricing of Securities:** Share prices in stock market are determined by the forces of demand and supply. A stock exchange is a mechanism of constant valuation through which the prices of securities are determined. Such a valuation provides important instant information to both buyers and sellers in the market.
- **Safety of Transaction:** The membership of a stock market is well-regulated and its dealings are well defined according to the existing legal framework. This ensures that the investing public gets a safe and fair deal on the market.
- **Contributes to Economic Growth:** A stock market is a market in which existing securities are resold or traded. Through this process of disinvestment and reinvestment savings get channelized into their most productive investment avenues. This leads to capital formation and economic growth.
- **Spreading of Equity Cult:** The stock market can play a vital role in ensuring wider share ownership by regulating new issues, better trading practices and taking effective steps in educating the public about investments.
- **Providing Scope for Speculation:** The stock market provides sufficient scope within the provisions of law for speculative activity in a restricted and controlled manner. It is generally accepted that a certain degree of healthy speculation is necessary to ensure liquidity and price continuity in the stock market.

NSE

The National Stock Exchange of India Limited (NSE) is the leading stock exchange of India, located in Mumbai. NSE was established in 1992 as the first dematerialized electronic exchange in the country. It is the world's 10th-largest stock exchange according to May 2021 data. It was recognised as a stock exchange by SEBI in April 1993 and commenced operations in 1994 with the launch of the wholesale debt market, followed shortly after by the launch of the capital market segment.

Industrial Economics and Foreign Trade

In 1996, the NSE was the first exchange in India that planned to trade derivatives specifically on an equity index. In February 2000, the NSE started an Internet trading system. NSE provides a trading platform for various types of securities for investors under one roof - equity, debentures, central and state government securities, Treasury commercial papers, certificate of deposits, mutual fund units etc.

BSE

BSE (formerly known as Bombay Stock Exchange) was started in 1875. However, in the 1850s, five stock brokers gathered together under a Banyan tree in front of Mumbai Hall. A decade later, the brokers moved their location to under another banyan tree at the junction of Meadows Street. With a rapid increase in the number of brokers, they had to shift places repeatedly. At last, in 1874, the brokers found a permanent location, that they could call their own. The brokers group became an official organization known as "The Native Share & Stock Brokers Association" in 1875. BSE is Asia's first & Fastest Stock Exchange in world with the speed of 6 micro seconds and one of India's leading exchange groups. Over the past 145 years, BSE has facilitated the growth of the Indian corporate sector by providing it an efficient capital-raising platform.

STOCK EXCHANGE INDICES

Stock market indices are the barometers of the stock market. They mirror the stock market's behaviour. With some 7,000 companies listed on the Bombay stock exchange, it is not possible to look at the prices of every stock to find out whether the market movement is upward or downward. The indices give a broad outline of the market movement and represent the market. Some of the stock market indices are BSE Sensex, BSE200, Dow Jones NSE-50, CRISIL-500, Business Line 250 and RBI Indices of Ordinary Shares. Mr. Charles Dow created the first stock market index known as the Dow Jones index back in May 1896.

NIFTY

NIFTY is a market index introduced by the National Stock Exchange. It is a blended word - National Stock Exchange and Fifty coined by NSE on 21st April 1996. NIFTY 50 is a benchmark based index and also the flagship of NSE, which showcases the top 50 equities traded in the stock exchange out of a total of 1600 stocks.

These stocks span across 12 sectors of the Indian economy which include - information technology, financial services, consumer goods, entertainment and media, financial services, metals, pharmaceuticals, telecommunications, cement and its products, automobiles, pesticides and fertilizers, energy, and other services.

NIFTY contains a host of indices - NIFTY 50, NIFTY IT, NIFTY Bank, and NIFTY Midcap 50. Nifty is owned by India Index Services and Products Ltd. (IISL). It is calculated using the free float market capitalization weighted method where the level of index reflects the total market value of the stocks relative to a particular base period. The base period selected

For calculating Nifty50 index is the close price on Nov 3, 1995. The base value has been set at 1000.

SENSEX

The BSE SENSEX (also known as the S&P Bombay Stock Exchange or Sensitive Index or simply the SENSEX) is a free-float market-weighted stock market index of 30 well-established and financially sound companies listed on Bombay Stock Exchange. These 30 companies are known as Blue chip companies. The 30 component companies which are some of the largest and most actively traded stocks are representative of various industrial sectors of the Indian economy. Published since 1 January 1986, the S&P BSE SENSEX is regarded as the pulse of the domestic stock markets in India. The base value of the SENSEX was taken as 100 on 1 April 1979 and its base year as 1978-79. On 25 July 2001 BSE launched DOLLEX-30, a dollar-linked version of the SENSEX.

Historically Sensex used the weighted market capitalization methodology, but from September 1, 2003, it shifted to Free Float Market Capitalization methodology. All the major indices in the world use the same methodology. The performance of the 30 selected key stocks directly reflects the level of the index.

If a person wants to trade in the stock market, he must obtain a demat and trading account.

Demat Account

Demat account is used to hold the shares purchased in digital or electronic form. During online trading, shares are bought and held in a Demat account, thus facilitating easy trade for the users. A Demat account holds all the investments an individual makes in shares, government securities, exchange-traded funds, bonds and mutual funds in one place. At any point of time, Demat account will show the shares and securities that a person is currently holding. In other words, it is a storage space to hold the shares and securities purchased. It is only a repository. It is similar to a bank account in which we hold deposits with the bank and the record of debit/credit balances are maintained in a bank passbook. In the same way, when we purchase or sell shares, it will be credited or debited to/from our Demat Account respectively.

Dematerialisation is the process of converting the physical share certificates into electronic form, which is a lot easier to maintain and is accessible from anywhere throughout the world. An investor who wants to trade online needs to open a Demat with a Depository Participant (DP - broker). The purpose of dematerialisation is to eliminate the need for the investor to hold physical share certificates and facilitating a smooth tracking and monitoring of holdings.

Demat account is an easy and convenient way to hold securities. It is safer than paper-shares and reduces paperwork for transfer of securities. It also reduces transaction cost and a single account can hold investments in both equity and debt instruments. Another advantage is that a person can trade from anywhere.

Trading Account

A trading account is used to buy and sell shares and securities in the stock market. A trading account provides an interface to buy and sell shares from the stock market. Previously, the stock exchange functioned on the open outcry system. In this, the traders used hand signals and verbal communication to convey their buying/selling decisions. Soon after, stock markets adopted the electronic system, and trading accounts replaced the open outcry system. Most commonly, a trading account refers to a day trader's primary account. Active investors tend to buy and sell assets frequently, often within the same trading session.

In the online method, the buyers and sellers don't have to be physically present at the stock exchange to place orders. Instead, they open a trading account with a registered stock market broker, who conducts trading on their behalf. Each trading account has a unique trading ID which is utilised to perform online transactions. Nowadays, brokers provide facilities to the investors to perform transactions by themselves.

A trading account acts like a link between a demat account and a bank account of an investor. When an investor wants to buy shares, he places an order through his trading account. The required amount of money should be transferred from the bank account to the trading account in advance. The said transaction goes for processing in the stock exchange. Upon execution, the required number of shares get credited into his demat account.

A similar kind of process is followed in order to sell equity shares. The investor places a sell order with the help of his trading account. It goes for processing in the relevant stock exchange. When the order is executed, the required number of shares are debited from the demat account and a proportionate sum gets credited to his trading account and then to the bank account. At any point of time, a trading account will show the transaction carried out in the stock market on that day.

Thus, if we want to trade in the stock market, we need both the accounts. To open trading and demat accounts, documents like proof of identity, address proof, Pan card etc. are needed.

'Shares' usually refers to units of ownership in a specific company – for example, you could say that you own ten Amazon shares.

'Stocks' is generally used to refer to portions of ownership of multiple companies – for example, you could say that you own stock in Amazon and Microsoft. That is, the total amount of shares owned in more than one company.

'Equity' is the term used for total ownership stake in the company – for example, if a company had 10,000 shares, and you owned 1000 of them, you could say that you own a 10% equity stake in that company.

Usually, these terms are used interchangeably.

Chapter 9

International Trade

International trade or foreign trade means trade between countries. In other words, it is the exchange of goods or services between two or more countries. The branch of economics which deal with foreign trade is International Economics.

International Economics deal with the economic and financial transactions among nations. It analyses the flow of goods, services, payments and money between a nation and the rest of the world. The policies which regulate these transactions and their effect on economic welfare of the nation are also coming under International Economics. More specifically, it deals with international trade theory, international trade policy, the balance of payments and foreign exchange markets.

Advantages and disadvantages of foreign trade

The following are the important advantages of foreign trade.

Optimal use of natural resources: International trade helps each country to make optimum use of its natural resources. Each country can concentrate on production of those goods which are advantageous to them. Therefore, wastage of resources is avoided.

Availability of all types of goods: It enables a country to obtain goods produced all over the world. The country may not be producing these goods because of their technological problems or because of higher cost when it is produced in the domestic country.

Specialisation: Foreign trade leads to specialisation as the country produce only those goods, where the production of such goods has certain advantages. The country can enjoy the benefits of division of labour.

Advantages of large-scale production: Due to international trade, goods can be produced for home consumption as well as for export. This enables country to produce in large scale and enjoy the benefits of large scale production.

Stability in prices: International trade helps to avoid wild fluctuations in prices by making the goods freely available all over the world.

Establishment of new industries: The importing of machinery and technology enable a country to start new industries.

Increase in efficiency: Due to international competition, the producers in a country attempt to produce better quality goods and to minimize the cost. This increases efficiency and productivity.

Development of the means of transport and communication:

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International trade requires the best means of transport and communication. Because of this, countries develop better transport and communication facilities.

9. International co-operation and understanding: The people of different countries come in contact with each other. Commercial integration amongst nations of the world encourages exchange of ideas and culture. It creates cooperation, understanding, and friendly relations among various nations.

10. Discouragement to Monopolies: International trade discourages the formation of monopolies in a country. If certain business units raise the prices through monopoly practices, the government imports those goods to reduce the prices in the country.

11. Better Employment Opportunities: As the Foreign trade expands, it creates jobs and provides better employment opportunities for the people both in and outside the country.

Disadvantages

1. A threat to domestic industries: International trade has an adverse effect on the development of home industries. It poses a threat to the survival of infant industries in the home. Due to foreign competition and unrestricted imports, the upcoming industries in the country may suffer.

2. Economic dependence: Underdeveloped nations have to rely on developed countries for their economic growth. Such dependency often results in economic exploitation.

3. Misuse of natural resources : Constant and excessive exports can exhaust the natural resources in a country. If not controlled the country may suffer in the long run.

4. Endangers independence: Foreign trade encourages slavery. It impairs the economic independence of the poor nations.

5. Import of harmful goods: Through international trade harmful goods may be imported and it may adversely affect health and well being of the people.

6. Evil Effects of Dumping: Sometimes, certain countries use international trade to dump their goods on other countries with a view to cheapen the value of the other country's goods.

7 Against national Defence: It is argued that a nation which depends on foreign sources of supply lacks defence during the war. During war, they may not be able to import goods.

Theories of International Trade

Absolute Advantage Theory

According to Adam Smith the basis of international trade is absolute cost advantage. Suppose there are two commodities and two countries which produce these commodities. One country is efficient in the production of one commodity and thus it has an absolute advantage in the production of this commodity. The other country has an absolute advantage over the production of the other commodity. Then the countries specialise and produce that commodity upon which they have an absolute advantage. They will export this commodity to the other country. By this process resources are utilised.

International Trade

most efficient way and output of both the countries will increase. From this mutual benefit both the countries will benefit.

absolute advantage theory can be explained with the help of an example.

	USA	UK
Number of Units of wheat per unit of labour	10	5
Number units of cloth per unit of Labour	3	8

In the above example USA has an absolute advantage over the production of wheat over UK. Because it is able to produce 10 units of wheat with one unit of labour. But UK can produce only 5 units. Similarly, UK has an absolute advantage over the production of cloth. Hence, US will produce and export wheat to UK and UK will produce and export cloth to US. Both the countries will gain from international trade.

This kind of production leads to specialisation and division of labour. But according to Adam Smith division of labour is limited to the size of the market. When there is international trade, there is ample scope for division of labour because size of the market increases substantially. However, Adam Smith theory of absolute advantage explains only one aspect of trade. It is too narrow in its scope.

Comparative Advantage Theory

Comparative cost advantage theory was developed by David Ricardo in 1857. Later it was refined by J S Mill, Marshall and others. According to Ricardo, even in the case of a country for which there is no absolute advantage for both the commodities, it can gain from international trade. In this situation, the country should specialise in the production and export of the commodity in which its absolute disadvantage is smaller and import the commodity in which its absolute disadvantage is greater. In other words, a country should specialise in the production of that commodity in which it is more efficient and leave the production of the other commodity to the other country.

The Ricardian theory is based on the following assumptions.

1. There are only two countries and two commodities
2. There are no barriers in international trade
3. There is no transport cost
4. Labour is the only component of cost of production
5. There is perfect competition and full employment
6. Labour is homogeneous
7. Labour is perfectly mobile within the country
7. Goods are exchanged according to the relative amount of labour embodied in them.

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Ricardo in his two commodity, two country model taken cloth and wine as commodities and England and Portugal as two countries.

Country	No. of units of labour Per unit of cloth	No. of units of labour per unit of wine	Exchange ratio
England	100	120	1 wine = 1.2 cloth
Portugal	90	80	1 wine = 0.88 cloth

The above example shows that Portugal has an absolute advantage in the production of both the commodities. However, a comparison of the ratio of the cost of wine production with ratio of the cost of cloth production in these two countries reveals that Portugal has a higher advantage in the production of wine. Hence it will specialise in wine production and produce wine. At the same time, England has a comparative advantage in cloth production and it will produce cloth. England can import wine from Portugal and Portugal can import cloth from England. Both the countries have mutual gain from trade as explained below.

In the absence of trade, one unit of wine commands 1.2 units cloth in England and 0.88 units of cloth in Portugal. When trade takes place, Portugal will gain if it can get anything more than 0.88 units of cloth for one unit of wine. Similarly, England will gain if it has to sacrifice anything less than 1.2 units of cloth. Therefore, any exchange ratio between 0.88 and 1.2 units of cloth for one unit of wine will bring a gain for both the countries.

Criticism

Most of the assumptions of the theory are its limitations. The following are the important criticisms against comparative cost theory.

1. Labour is not the only element of cost.
2. Exchange ratio is not always fixed according to the cost ratios. Demand and supply play an important role in fixing the price.
3. The assumption of full employment and perfect competition are not valid.
4. The assumption of free trade (trade without barriers) is highly unrealistic.
5. According to Graham if one country is very small and other country is big comparative specialisation may not be possible. The big country cannot sell its entire surplus to the small country.
6. The theory of comparative cost gives the limit within which exchange ratio will be determined. It does not say how the exact point within these limits is determined.

The Heckscher-Ohlin Theorem or Factor Endowment Theory

The factor endowment theory was originally developed by Eli Heckscher in 1919. Later in 1935 it was refined by his student Bertil Ohlin. Hence the theory is popularly known as Heckscher-Ohlin Theorem. It is a two-country two-commodity model. The following are the important assumptions of the model.

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There is perfect competition in the factor market and product market.

Factors of production are perfectly mobile within the country but immobile between the countries.

Factors production are homogeneous.

There is full employment.

There is free trade between countries.

There is no transport cost.

Technology remains the same in both countries.

The classical theory showed that the basis of international trade was comparative cost differences. But it did not explain the reason for comparative cost differences. The Heckscher-Ohlin theorem tried to explain the causes of comparative cost differences that exist internationally. According to the theorem, the differences in comparative advantage among nations is mainly due to the differences in relative factor abundance or factor endowments.

Heckscher-Ohlin theorem can be stated as follows. A country will produce and export that commodity whose production requires the intensive use of the nation's relatively abundant and cheap factor and import the commodity whose production requires the intense use of relatively scarce and expensive factor. In other words, relatively labour abundant country will export the relatively labour-intensive commodity and import the relatively capital-intensive commodity.

In the Heckscher-Ohlin theorem factors of production are considered as abundant or scarce in relative terms and not in absolute terms. For example, a country will be considered as capital abundant only if the ratio of capital to other factors is higher when compared to other countries.

Country A	Supply of labour	= 50
	Supply of capital	= 40
	Capital- labour ratio	= 0.8

Country B	Supply of labour	= 16
	Supply of capital	= 20
	Capital-labour ratio	= 1.25

In the above example, country A has more capital in absolute terms but country B is endowed with or abundant in capital because the ratio of capital to labour is high in country B.

Factor Price Equalisation Theorem

Factor price equalisation theorem is a corollary of Heckscher-Ohlin theorem. It was proved by Paul Samuelson and hence it is called Heckscher-Ohlin-Samuelson theorem.

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The theorem states that free international trade will equalise factor prices between countries relatively and absolutely and this serves as a substitute for international factor mobility. In a country, international trade increases the demand for abundant factors because specialisation takes place on the basis of factor endowments or abundance. Therefore, the prices of the abundant factors increase. Similarly, the demand for the scarce factors decreases and hence their prices also decrease. Thus, when a country exports goods containing a large proportion of the relatively abundant and cheap factors and imports goods containing a large proportion of scarce factors, it may act as a substitute for inter-regional factor movements and lead to factor price equalisation.

Merits of Heckscher-Ohlin theory

1. Heckscher-Ohlin theory provides a more comprehensive and satisfactory explanation of foreign trade.
2. Heckscher-Ohlin theory explains the reason for comparative cost differences between nations in terms of factor endowments.
3. Heckscher-Ohlin theory is formulated within the framework of the general equilibrium.
4. The Heckscher-Ohlin theory highlights the role of relative prices of factors in determining the trade flow.
5. Heckscher-Ohlin theory highlights the impact of trade on product and factor prices.

Effects of International Trade

According to Heckscher-Ohlin theorem, international trade has the following effects.

1. **Equalisation of factor prices:** Since specialisation takes place according to factor endowments, it equates factor prices between countries.
2. **Equalisation of Commodity prices:** International trade leads to the movement of goods from those areas where they are abundant to areas where they are scarce. This would equalise the commodity prices.

Balance of Payments

Balance of payments is a systematic record of all economic transactions of a nation with the rest of the world for a specific period of time. Usually, the time period is taken as one year. The main purpose of balance of payments is to inform the governments regarding the international currency position of the nation and to help in the formulation of policy accordingly. Balance of payments is also useful to banks, firms and individuals who are directly or indirectly involved in international trade and finance.

It is obvious that during a period of time millions of transactions take place between a nation and with the rest of the world. Therefore, all these transactions cannot appear individually in the balance of payment statement. As a summary statement, balance of payments aggregates all these transactions under different heads.

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Balance of Trade and Balance of Payments

It is meaningful to distinguish between balance of payments and balance of trade. Balance of trade includes only those transactions which are involved in the exporting and importing of visible items (goods). It does not include invisible items such as various kinds of services like shipping, banking, insurance, payment of interest and dividend etc. On the other hand, balance of payments includes both visible and invisible items. Therefore, balance of payments gives a better picture of a country's external balance.

Components of Balance of Payments

Balance of payments accounting follows double-entry book-keeping system. That means each transaction will result in a credit entry and debit entry of equal size. Therefore, balance of payments will always balance. That is, total amount of debit will be equal to total amount of credit. Sometimes, an item called errors and omissions will be added to balance the balance of payments.

Usually, international transactions are classified under the following heads:

1. Current Account
 2. Capital Account
 3. Unilateral payments Account
- Official Reserve Account

Current Account

Current account consists of two major items i) merchandise (visible) exports and imports ii) invisible exports and imports.

Merchandise exports and imports: Merchandise exports, that is sale of goods abroad are credit items and merchandise imports, that is purchase of goods from abroad are debit items. Merchandise exports and imports are the most important international transactions in most of the countries.

Invisible exports and imports: Invisible exports are credit entries and imports are debit entries. Invisible exports mean sale of services like transport, insurance, foreign tourist expenditure in the home country and interest received on loan and dividend on investment abroad etc.

Invisible imports include purchase of services like transport and insurance, tourist expenditure abroad and payment on foreign loans and foreign investments etc.

Capital Account

The capital account includes short term and long-term capital transactions. Capital inflows are coming as credit entries and capital outflows as debit entries. For example, when a Japanese firm invest 100 million in India, there will be an entry under credit for India and an entry under debit for Japan. However, the payment for capital services like interest on loan and dividend payments for investment are included in current account. The following are the two major items coming under capital account.

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1. Loans and borrowings – It includes all types of loans from both the private and sectors located in foreign countries.
2. Investments – These are funds invested in the corporate stocks by non-residents.

The flow of funds from and to foreign countries through various investments in estates, business ventures, foreign direct investments etc is monitored through financial account. This account measures the changes in the foreign ownership domestic assets and domestic ownership of foreign assets

Unilateral Transfers Account

Unilateral Transfer means the one-way transfer of an item from one person to another. One-way transfers are without any expectations of anything in return. This is an important item of balance of payments. In a broader sense it is a part of current account. The following are the important items coming under unilateral transfers.

- Payments or remittances from immigrants to their home country.
- Humanitarian aid.
- Aid by one country to another. Usually, the aid is from developed or prosperous nations to less developed nations.
- Contribution to charitable institutions.
- Membership payment to international agencies.
- Gift from one country to another. This gift could be from a person, business or government.

The official reserve account

The official reserve account is a subdivision of the capital account. It is the foreign currencies and securities held by the government, usually by its central bank, and is used to balance the payments from year to year. The official reserves increase when there is a trade surplus and decrease when there is a deficit. Sometimes the central bank will use it to intervene in the foreign exchange market to set the exchange rate to some desired level.

Balance of Payments Disequilibrium – Deficit

The balance of payments is in disequilibrium when it shows a surplus or deficit. When the demand for foreign exchange exceeds the supply of foreign exchange, there is a deficit in the balance of payments. There are a number of factors responsible for a disequilibrium or deficit in the balance of payments.

Economic Factors

The following are the important economic factors which lead to balance of payments disequilibrium.

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Development disequilibrium: Large scale development expenditure may increase the purchasing power of the people and they demand more imported items. Besides, developing countries may import capital goods like machinery and equipment for their economic development. This also increases their import bill and results in a deficit.

Cyclical Disequilibrium: Cyclical fluctuations create a boom and depression. When there is a boom, imports may increase more than exports and it creates a deficit in the balance of payments.

Secular Disequilibrium: In developed countries, disposable income and aggregate demand will be very high. Wages may increase and the production cost also increases. This results in high prices. Higher aggregate demand and higher prices lead to larger imports and a deficit in the balance of payments.

Critical Factors

Political instability in a country may adversely affect the capital flows and investments. It may lead to large capital outflows and less investment in the domestic country. This may create a deficit in the balance of payments.

Social factors

Changes in tastes, fashion etc. may change consumption habits of the people and this may affect exports and imports as well as the balance of payments.

Correction of Disequilibrium or Deficit

When there is a deficit in the balance of payments, it has to be corrected. The following are the important measures to correct a balance of payments disequilibrium.

Automatic Correction: When there is a disequilibrium in the balance of payments, the economy will try to correct it automatically with the help of the demand supply mechanism. For example, when there is a deficit, or the demand for foreign exchange exceeds its supply, the exchange rate will be adjusted accordingly and there will be a fall in the external value of the domestic currency. This will increase exports and correct the deficit.

Deliberate Measures: The three deliberate measures are a) Monetary measures b) Trade measures and c) Miscellaneous measures

Monetary measures The important monetary measures are

1) **Monetary contraction or expansion:** Expansion or contraction of money supply can affect the balance of payments position. When there is a deficit, a contraction of money supply will decrease the purchasing power of the people and hence the aggregate demand as well as the price level falls. This reduces imports. When there is a fall in the price level in the domestic economy, it encourages exports. Thus, the deficit will be corrected.

2) **Devaluation:** It means a deliberate reduction in the value of a currency by reducing the official rate at which it is exchanged for another currency. When there is a deficit in the balance of payments, devaluation of the currency encourages exports and discourages imports.

import. Devaluation makes the domestic goods cheaper for the foreigners and foreign goods expensive for the people in the home country.

iii) **Exchange control:** Under exchange control, the government or the central bank will have the complete control over the foreign exchange earning of the country. The government will keep the entire foreign exchange earnings and this helps the government to control imports.

Trade Measures Trade measures are export promotion and import control.

i) **Export promotion:** Export can be encouraged by abolishing export duty, giving export subsidy and by providing facilities for export-oriented production.

ii) **Import control:** Imports can be discouraged by increasing import duties, through import quotas import licensing etc.

Miscellaneous Measures Miscellaneous measures include encouragement of foreign investment, promotion of tourism etc.

Devaluation

Devaluation means a deliberate reduction of the value of the domestic currency in terms of foreign currencies. A country which faces a serious problem of deficit in the balance of payments may resort to devaluation. This will stimulate their export and discourage import. The working of devaluation can be explained with the help of the devaluation of Indian rupee in 1966.

Before devaluation the exchange rate was \$1 = Rs. 4.76. Devaluation of the Indian Rupee was 36.5 per cent and it was 57.56 against dollar. Then the exchange rate became \$1 = Rs.7.5. After devaluation import became costly. Before devaluation, a foreign commodity which cost \$1 Abroad cost Rs.4.76 in India. But, after devaluation the same commodity cost \$1 abroad but Rs.7.5 in India. Thus, imported goods became costlier in India. Similarly, export became cheaper after devaluation. Before devaluation a commodity which cost Rs.4.76 in India and \$1 abroad now cost only \$0.64 for the foreigners. This made Indian goods cheaper in the foreign market and encouraged export.

Limitations of Devaluation

1. The success of devaluation depends on reactions of other countries. If they retaliate by devaluing their currencies, devaluation will not be successful.
2. If prices in the domestic country increases at the same rate or at a higher rate of devaluation, it will not will not increase export or decrease import.
3. The success of devaluation also depends on the elasticities of demand for export and import. According to the Marshall-Lerner condition devaluation will be successful only if the sum of elasticities of demand for exports and imports of the domestic country is greater than one.
4. In spite of an increase in the demand for a country's export due to devaluation, the extent of increase in exports depends on the exportable surplus or the quantity available for export.

International Trade

Effect of Elasticities of Demand for Exports and Imports

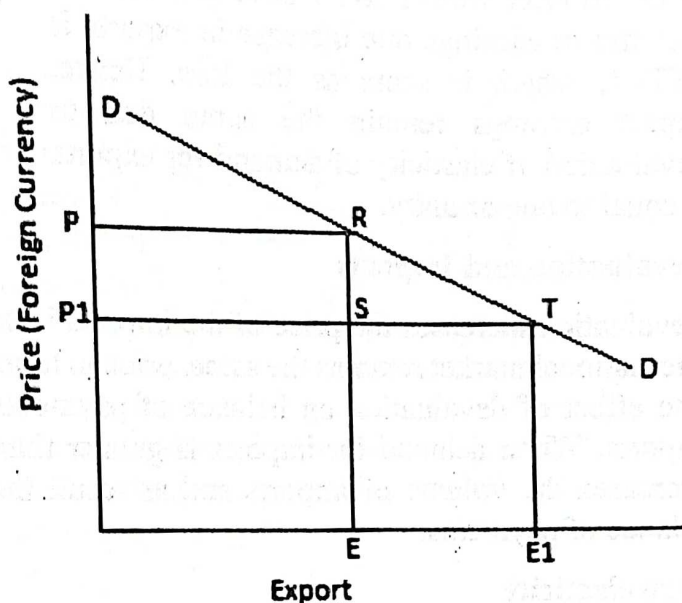
The effect of devaluation depends on the elasticities of demand for exports and imports.

Effect of Devaluation on Exports

The effect of devaluation on exports depends on the elasticity of demand for a country's exports by the foreigners. The following three situations make this clear.

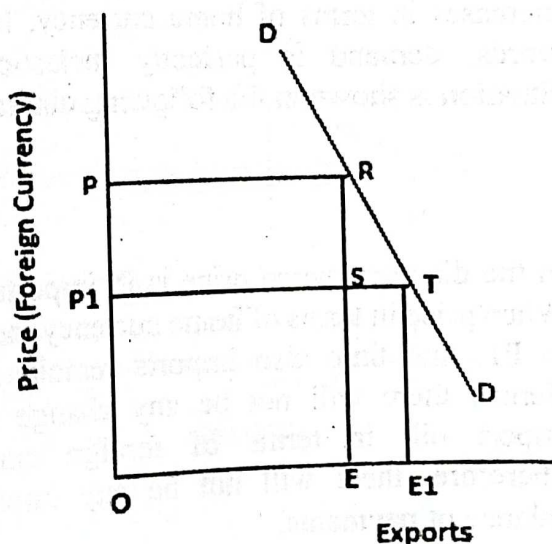
More elastic demand: When demand for exports is more elastic, a fall in price of exports results in a large increase in quantity exported, which more than offsets the fall in price, and export earnings increase. This leads to a favourable balance of payments. The following diagram illustrates this.

The diagram shows the price of exports in terms of foreign currency on the vertical axis and the quantity of exports on the horizontal axis. A downward-sloping demand curve D is shown. Initially, the price is P and the quantity is E , represented by point R on the demand curve. When the price falls to P_1 due to devaluation, the quantity increases to E_1 , represented by point T on the demand curve. The loss in export earnings due to the fall in price is shown by the area $PRSP_1$. The increase in export earnings due to the increase in quantity is shown by the area $ESTE_1$, which is larger than the loss. Thus, there is a favourable effect on the balance of payments.



Less Elastic Demand

When the price elasticity of demand is less than one, there will be a decrease in export earnings due to devaluation. Here, export will increase in a less proportion when compared to the increase in price. In this case, when the price falls from P to P_1 , the loss in earnings due to the fall in price is $PRSP_1$. But the increase in earnings due to the increase in exports is $ESTE_1$, which is less than the loss. Thus, devaluation will have an unfavourable effect on the balance of payments when the elasticity of demand for export is less than unity.

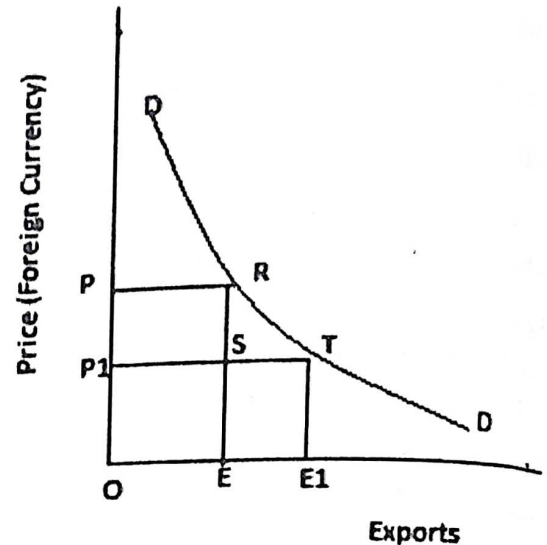


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Unit elastic Demand

When Demand for exports is unit elastic, devaluation will have no effect on the export earnings. Here the increase in exports will be in equal proportion to the decrease in price.

In the diagram, the loss in export earnings due to fall in price from P to P_1 is $PRSP_1$ and the increase in earnings due increase in exports is $ESTE_1$, which is same as the loss. Hence, export earnings remain the same due to devaluation, if elasticity of demand for exports is equal to one or unity.



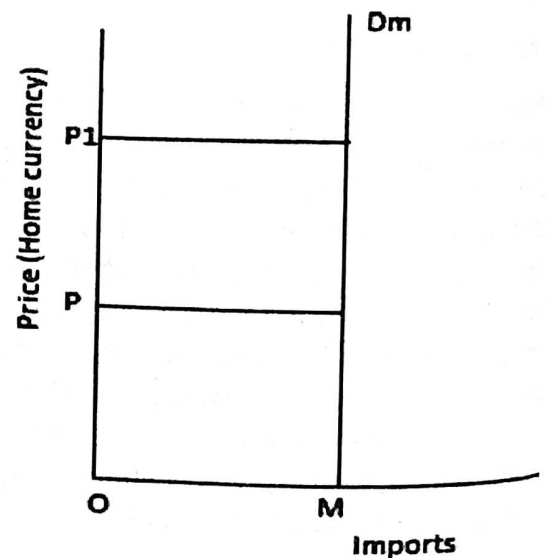
Devaluation and Imports

Devaluation increases the price of the imports in terms of home currency. As price in the international market remains the same, price in terms of foreign currency remains the same. The effect of devaluation on balance of payments depends on elasticity of demand for imports. When demand for imports is greater than zero, an increase in price of imports decreases the volume of imports and as result there will be a favourable effect on the balance of payments.

Zero elasticity

When elasticity of demand for imports is zero, imports will not change as the price of imports increases in terms of home currency. In other words, demand is perfectly inelastic. This situation is shown in the following diagram.

In the diagram, when price is P , imports is M . When price in terms of home currency increases to P_1 , that time also imports remains at M . Hence, there will not be any change in the import bill in terms of foreign currency. Therefore, there will not be any impact on balance of payments.

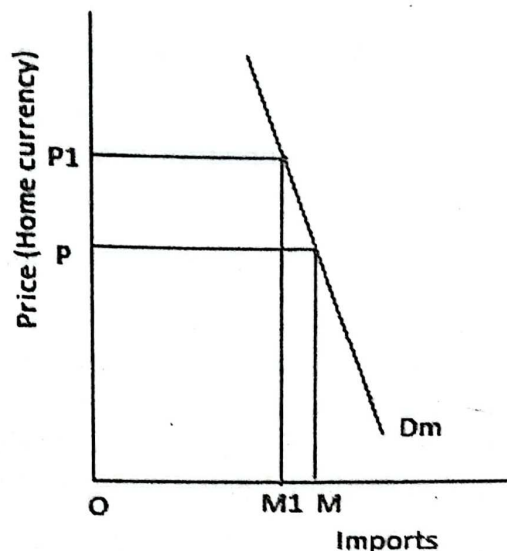


International Trade

elastic demand

When the value of elasticity of demand is greater than zero but less than one, there will be a decline in imports due to an increase in the price of imports. This effect will not be substantial. Hence, there will be a favourable effect on the balance of payments. As shown in the diagram.

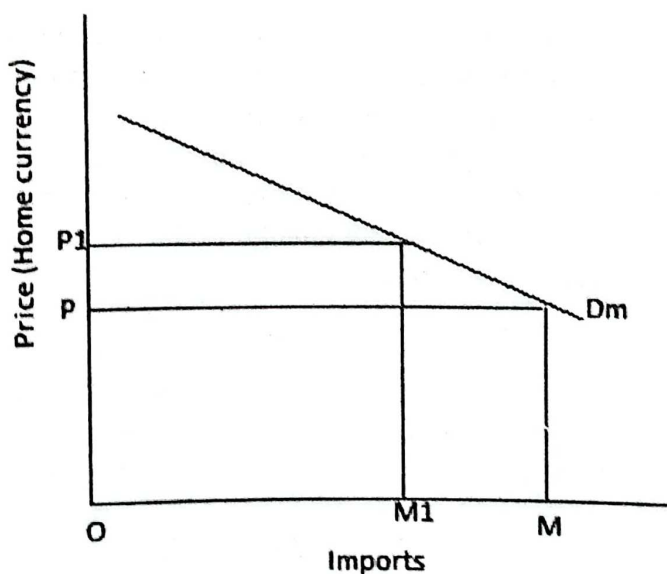
In the diagram, when price increases from P to P_1 , imports decrease from M to M_1 . When compared to the increase in price, the decrease in imports is proportionately very small. Thus, when demand for imports is relatively inelastic, the impact of devaluation on balance of payments will be small and it is favourable.



More elastic demand

When demand for imports is more elastic, an increase in price causes a substantial decrease in the volume of imports and hence it has a larger impact on the import bill as well as the balance of payments. The following diagram illustrates this.

In the diagram, when price increases from P to P_1 , imports decrease from M to M_1 . This is a substantially larger decrease in the volume of imports and hence the import bill also decreases substantially. Thus, to get a good result on the balance of payments through devaluation, demand for imports should be more elastic.



The above analysis shows that the impact of devaluation on the balance of payments depends on the combined effect of the elasticity of demand for exports and imports. This combined effect is explained in the Marshall-Lerner Condition.

Marshall-Lerner Condition

The Marshall-Lerner condition states that devaluation will improve the balance of payments of a country if the sum of the elasticities of demand for a country's exports and its demand for imports is greater than one. In other words

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$ex + em > 1$ where ex is the elasticity of export and em is the elasticity of import.

- If $ex + em > 1$, devaluation will improve current balance of payments position
- If $ex + em < 1$, Devaluation will deteriorate balance of payments
- If $ex + em = 1$, devaluation will have no effect on balance of payments

If elasticity of demand for imports is equal to zero, then also devaluation will be effective, provided elasticity of demand for exports is greater than one.

Devaluation – the J-curve effect and Currency Pass-Through

The J-curve shows the time path of trade flows after devaluation. It says that, devaluation will lead to an initial deterioration of the trade balance and this will be followed by a subsequent improvement. Empirical evidence proves this kind of behaviour of trade balance. That is, if the balance of trade is plotted against time, it will give a 'J' shaped curve showing the initial deterioration and the subsequent improvement.

One possible reason for the 'J' curve effect is currency invoicing. That is, if export contract is in terms of domestic currency and import contract in terms of foreign currency, this may happen. Another explanation is decision lags in forming new business connections and placing new orders. Further, another reason can be the time lag between the new orders placed and the payment takes place after devaluation. Production lag also can be a reason, that is the time taken to increase the output of goods for which demand has increased.

Currency Pass-Through

Theoretically it is assumed that a given change in exchange rate will bring a proportionate change in import prices. But, in practice import prices change less than proportionately, thus weakening the effect of devaluation. The extent to which the change in exchange rate leads to a change in export and import prices is called currency pass through relationship. This may be due to various time lags and other problems. Regarding the US it is estimated that for every 10 percent change in the value of dollar leads to only six percent change in import and export prices.

Free Trade Versus Protection

Free trade is a trade policy that does not restrict imports or exports. In other words, it refers to the trade that is free from all artificial barriers to trade like, tariffs, quota restrictions, exchange control etc. In the case of free trade the free market idea is applied to international trade. Protection on the other hand is the policy of protecting domestic industries against foreign competition by means of tariffs, subsidies, import quotas etc. It affects mainly the imports of a country. Government-levied tariffs are the chief protectionist measures. They raise the price of imported products, making them more expensive than domestic products.

Arguments for Free Trade

The following are the important arguments in favour of free trade

International Trade

Efficient utilisation of resources: Free trade leads to the most economic utilisation of resources. The resources will be utilised in the production of those goods for which it is suited.

Division of labour and specialisation: Under free trade Each country will specialize in production of those goods in which it has a comparative advantage. This leads to large scale production, division of labour and efficiency.

Efficiency: There is intense competition under free trade and hence inefficient firms do not survive. Therefore, firms try to increase their efficiency.

Dampen monopoly practices: Free trade jeopardise domestic monopolies by providing internationally available goods at lowest price.

Wide variety of goods: Free trade enables the consumers to avail all types of internationally available goods at cheapest price.

Avoid corruption and red-tapism: Free trade is free from bureaucratic interferences and hence it avoids corruption and delay in taking trade related decisions.

Economic growth: Large scale production and division of labour leads to economic growth.

Arguments Against Free Trade

1. **Threat to domestic industries:** Because of free trade, imported goods become available at a cheaper price. Thus, an unfair and cut-throat competition develops between domestic and foreign industries. In the process, domestic industries are wiped out.

2. **Harmful commodities:** a country may have to change its consumption habits. Because of free trade, even harmful commodities (drugs, etc.,) enter the domestic market. To prevent this, restrictions on trade are required to be imposed.

3. **The Unfair-Competition Argument:** It is argued that free trade leads to competition among unequals. Developing countries cannot fairly compete with the developed countries. Their cost conditions may be different.

4. **Job outsourcing leads to unemployment:** Free trade allows businesses to move their production to a place where it is cheaper to produce. In countries where labour or production costs are high, the firms may outsource their work and this may lead to loss of employment domestic economy.

5. **Degradation of environment:** Emerging developing economies often may not have sufficient environment protection laws. Free trade leads to depletion of timber, minerals, and other natural resources because of their over exploitation.

6. Poor Working Conditions: Multi-national companies may outsource jobs to emerging developing countries without adequate labour protections. As a result, women and children often may involve in factory jobs in sub-standard conditions.

Arguments in Favour of Protection

When the domestic industries are threatened by foreign competition, nations may resort to protectionism to safeguard national interest. The following are the important arguments in favour of protection.

1. Infant industry argument: This argument says that when a new industry is launched, it must be protected from foreign competition. Already established companies will have certain advantages like economies of scale, experience, market power etc. If the infant is to compete with such a foreign competitor, it will be competition between unequals and that will lead to the destruction of the infant industry. That doesn't mean that it has to be protected for ever, but only during the blooming stage. According to protection policy "Nurse the baby, Protect the child and Free the adult". But some economists criticised that if protection is given to an infant, it will remain as an infant forever.

2. Strategic and Key industry argument: It is argued that a country should develop its own strategic and key industries. This is because the development of other industries and the development of the economy needs the output of these industries. Hence, we have to protect and develop such industries.

3. National Defence: If we depend on other nations for defence equipment it will be a foolishness because if they deny it at times when it is most urgent it will be a threat to the security of the nation. Hence defence industries should be protected and developed.

4. Diversification: A diversified industrial structure is necessary to maintain stability in the economy and to strengthen the economy.

5. Terms of trade argument: When a country protects its industries by imposing tariffs or quotas, it will restrict the imports and improve the terms of trade.

6. Improving balance of payments: When imports are restricted through protection policies, it will help to improve the balance of payments.

7. Anti-Dumping: Through dumping a foreign company may sell its product at very low prices in the home country and this may ruin the domestic industries. Once they get a monopoly over the product, they will increase the price and hence it will be harmful in the long run. By protective measures, a government can prevent dumping.

8. Employment argument: Restricting imports by way of protective measures encourages production in the home country and it will create more employment opportunities in the home country.

International Trade

Keeping money at Home: When a commodity is imported, money from the home country is going abroad. On the other hand, when imports are restricted through protection, money can be kept in the home country itself.

Equalisation of costs of production: Imposition of import duties increases the price of foreign goods and thus it is argued that it will equalise the cost of the commodity in the home country and in the foreign market. But critics say that cost differences is the very basis of international trade.

Size of the home market: It is argued that protection will enlarge the market for agricultural products. This will happen because of the increase in the price of the farm products imported from foreign countries as well as the increase in the purchasing power of the workers who engage in the industrial sector by way of protection.

Arguments Against Protection

Protection is against the interest of the consumers as it increases the price of the imported products. Further, consumers are denied the opportunity for enjoying variety goods.

It discourages competition and hence compromises efficiency.

It encourages the growth of domestic monopolies because of the weakening of foreign competition.

Protection discourages innovations and cost reduction.

It leads to uneconomic utilisation of world's resources.

Protection may lead to trade wars and international conflicts among trading nations. When one country takes protective measures, others may retaliate.

Trade Barriers

Trade barriers refer to the government policies and measures which restrict the free flow of goods between the countries. Broadly, trade barriers are divided into two groups. They are tariff barriers and non-tariff barriers.

Tariff Barriers

Tariff barriers are duties or taxes imposed by the government of a country on its imports or exports. Tariff is an important measure of protection. But, recently, because of the involvement of WTO countries are reducing tariffs.

On the basis of origin and destination of goods, tariffs can be classified in to the following three categories.

i) Export duties: These are taxes levied on goods originated in the duty levying country (home country) and destined for some other countries.

ii) Import duties: These are taxes imposed on goods originated abroad and destined for the duty levying country (home country).

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iii) Transit duty: These are taxes imposed on goods crossing the borders of a country but these goods are originated from and destined for some other countries.

Based on the quantification of tariffs, these can be classified as

- i) Specific duties: It is a fixed amount of duty imposed on each unit of the commodity exported or imported.
- ii) Ad-valorem duties: These are duties levied as a fixed percentage of the value of the commodity imported or exported.
- iii) Compound duties: When specific and ad-valorem duties are imposed on a commodity it is known as compound duties.

Based on the application of Tariffs between different countries, tariffs may be classified as

- i) Single-column tariff: Under this type of tariff system, a uniform tariff is imposed on similar product irrespective of the country from which they are imported.
- ii) Double-column tariff: In this type two rates are imposed on some commodities or all commodities.
- iii) Triple-column tariff: In this system three rates of tariffs – general, the intermediate and preferential- are levied.

Based on the purpose they serve, tariffs can be classified as

- i) Revenue tariff: When raising revenue is the only motive of imposing a tariff, it is called revenue tariff. Generally, this type of tariff rates will be low.
- ii) Protective tariff: This type of tariff is imposed with an intention to protect domestic industries. Usually, the rates will be high.
- iii) Countervailing and Anti-Dumping tariffs: Countervailing tariffs are imposed on those commodities which are heavily subsidised by the foreign governments. When foreign goods are sold in the domestic market at price lower than its cost of production, anti-dumping duties are imposed.

Effects of Tariff

The following are the effects of tariff on the economy.

- i) **Protective effect:** When an import duty is imposed, imports become costlier. Hence, the demand for domestic goods will increase and it will protect the domestic industries.
- ii) **Revenue effect:** A tariff will increase the revenue of the government if it does not completely stop the imports.

International Trade

Income and employment: A tariff will increase the demand for domestic goods. Hence it will increase production, employment and income in the home country.

Balance of payments effect: Tariff may help to improve the balance of payments as it restricts the imports.

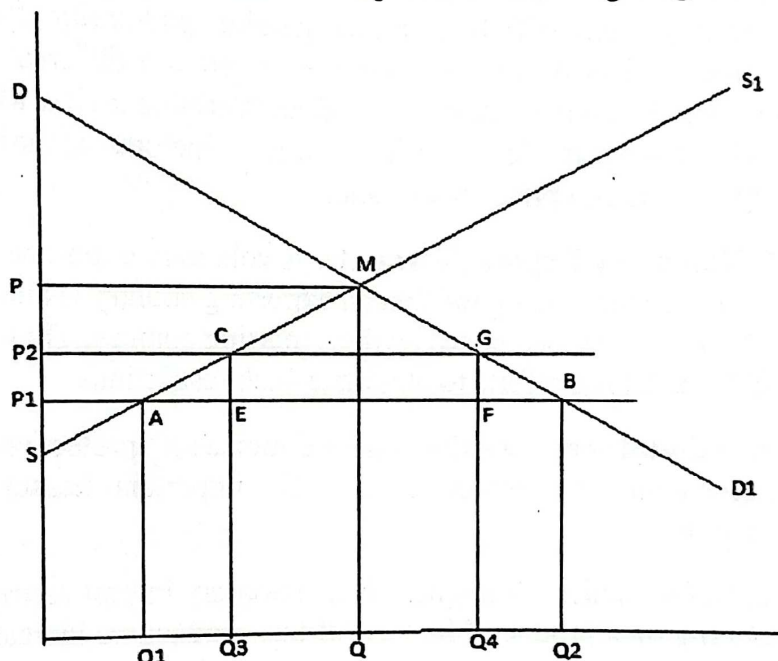
Consumption effect: An import duty will increase the price of the commodities and hence it will reduce the buying capacity of the people.

Competitive effect: An import duty protects the domestic industries and hence it may reduce competition in the economy. This can lead to inefficiencies.

Redistribution effect: If the import duty increases the price of a domestically produced product, it leads to a redistribution of income in favour of the producers.

The effects of tariff in general can be explained with the help of the following diagram.

In the diagram, in the absence of foreign trade domestic demand curve DD_1 and supply curve SS_1 intersect at point M . The equilibrium price is P and the quantity demanded and supplied is Q . Suppose, foreign supply is perfectly elastic at price P_1 . Then under free trade, supply in the economy can be represented by the straight line P_1B . Under free trade, the total consumption will be Q_2 and out of this Q_1 will be supplied by domestic producers and the quantity Q_1Q_2 will be imported.



Suppose the government imposes a tariff equal to P_1P_2 . This increases the price from P_1 to P_2 . At P_2 price domestic supply increases from Q_1 to Q_3 . The remaining part of the domestic demand Q_3Q_4 will be met by import.

Under free trade the total consumers surplus is DP_1B . But under protection it decreases to DP_2G . The total loss in consumer's surplus is P_1P_2GB and this is distributed in a number of ways. The tariff per unit is P_1P_2 and total import is Q_3Q_4 . Therefore, the government will get a total revenue of $CEFG$ from import duty.

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Because of the imposition of the tariff, price increased from P_1 to P_2 . Hence, the producers get additional benefits of P_1P_2CA . This is a transfer of income from consumers to producers and it is the redistributive effect of tariff.

Because of the tariff domestic supply increases from Q_1 to Q_3 . ACE represents the sum of additional cost per unit of output. This is the protective effect of the tariff. Similarly, consumption decreases from Q_2 to Q_4 and hence the loss in consumer's surplus is GFB. This is the consumption effect.

The actual loss to the economy because of the tariff is the sum of protective effect and consumption effect ($ACE + GFB$). The revenue effect (CEFG) and redistributive effects (P_1P_2C) are only a transfer of income from one group to another group.

Non-Tariff Barriers (NTBs)

Recently, non-tariff barriers are gaining popularity. Its impact is more on developing countries than developed countries. There are different types of NTBs. Hardcore NTBs include, Voluntary Export Restraints, Variable levies, Multi-Fibre Agreement restrictions and non-automatic licensing. Others include technical barriers, minimum pricing regulations and price surveillance.

1. Voluntary Export Restraints: A voluntary export restraint (VER) is a trade restriction on the quantity of a good that an exporting country is allowed to export to another country. This limit is self-imposed by the exporting country. They are highly discriminatory and the WTO is taking efforts to eliminate such restrictions.

2. Administered Protection: Administered protection encompasses a wide range of bureaucratic government actions. The important measures under administered protection include

a) **Safeguards:** A safeguard is a temporary import restriction that a country is allowed to impose on a product if imports of that product are increasing so as to cause, or threaten to cause, serious injury to a domestic industry that produces a similar or directly competitive product.

b) **Health and product standards:** The developed countries fix certain health and product standards which hinder the exports of developing countries because of added cost or technical requirements.

c) **Customs Procedures:** Customs procedures of many countries act as a trade barrier. For example, frequent changes in customs procedures of Japan acted as a barrier to export.

d) **Licensing:** Many countries use licensing as a measure to restrict trade, especially imports.

e) **Monetary controls:** Monetary controls are also employed to regulate imports. For example, RBI in 1990s took several measures which include a 25 percent interest rate surcharge on bank credit for imports.

International Trade

Environmental protection laws: Many countries framed environment protection laws to restrict imports. For example, the US congress has passed legislation to prohibit the import of shrimp harvested with commercial fishing technology on the argument that it will threaten the survival of turtles.

Foreign Exchange Regulations: In some countries, the State monopolise foreign exchange and hesitate to release foreign exchange for imports.

Merits of NTBs

NTBs are less transparent, difficult to identify and it is impossible to quantify its impacts. They are unfair because they do not treat exporters equally.

Quantitative Restrictions or Quotas

A quota represents a ceiling or limit on the volume of exports or imports. The following are the important types of import quotas.

1. **The tariff or custom quota:** Under this system, import of a commodity up to a specified quantity is allowed to be imported duty-free or at a special low rate of duty. But imports in excess of this fixed limit are charged a higher rate of duty. The tariff quota thus combines the features of a tariff with those of quota.

2. **The Unilateral Quota:** Under this system, a country places an absolute limit on the import of a commodity during a given period. It is imposed without prior negotiation with foreign governments.

3. **The Bilateral Quota:** Under this system, quotas are set through negotiation between the importing country and the exporting country.

4. **The Mixing Quota:** It is a type of regulation which requires producers to utilise a certain proportion of domestic raw materials along with imported parts to produce finished goods domestically. It thus sets limits on the proportion of foreign-made raw materials to be imported and used in domestic production.

5. **Import Licensing:** Under this, prospective importers are required to obtain a licence from the proper authorities for importing any quantity within the specified quotas. Licences are generally distributed among established importers keeping in view their share in the country's import trend.

Effects of quotas

The following are the important economic effects of quotas

1. **Price effect:** As quotas restrict imports and domestic supply, it increases prices in the domestic economy.

2. **Consumption effect:** Since quotas raises the price, it reduces consumption.

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3. Balance of payments effect: As quotas restrict imports, balance of payments position will be improved.

4. Protective effects: Quotas restrict imports and guard domestic industries from foreign competition.

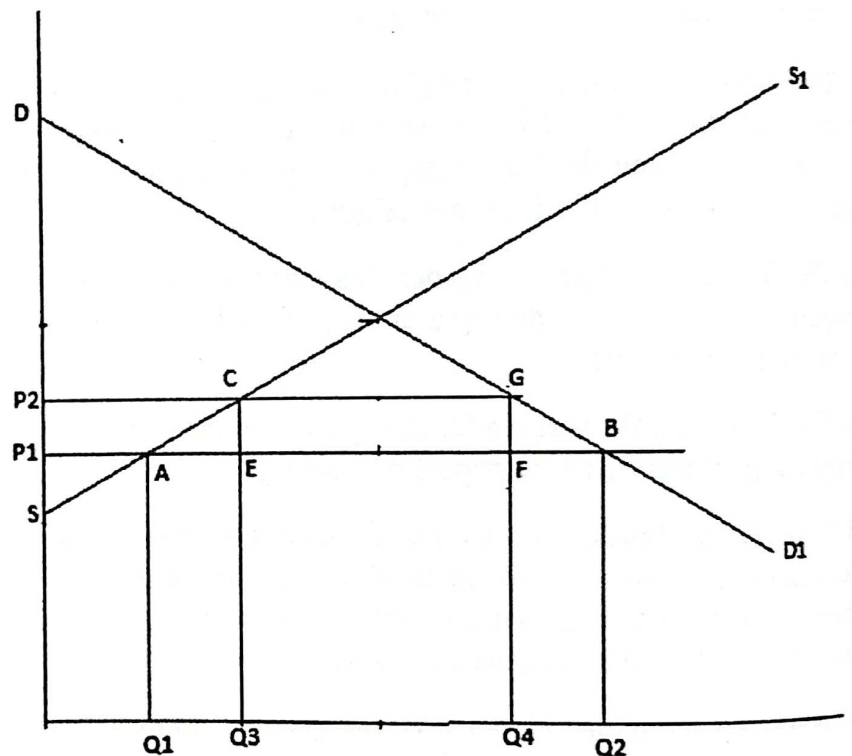
5. Revenue effect: When quotas are administered by means of a license, government can get some revenue in the form of license fee.

6. Redistributive effect: If price increases because of quota restrictions, there will be some redistribution of income in favour producers.

Effects of quotas can be explained with the help of the following diagram similar to the case of tariff.

In the diagram DD1 is the domestic demand curve and SS1 is the domestic supply curve. The foreign supply is assumed to be perfectly elastic at price P_1 . At price P_1 the domestic demand is Q_2 , out of which Q_1 quantity will be supplied by domestic producers and Q_1Q_2 will be met by way of import.

Suppose the government fixes the import quota as Q_3Q_4 . The reduction in supply increases the price to P_2 . At P_2 price domestic suppliers are producing a larger quantity Q_3 .



Because of the increase in price from P_1 to P_2 , producers get additional income equals to P_1P_2CA . This is the redistributive effect. ACE represents the protective effect (sum of additional cost per unit of output because of the increase in production) and BGF represents the consumption effect (loss in consumer's surplus due to quota restriction).

Tariff Versus Quotas

1. Quota is more effective in regulating trade. When a tariff discourages imports, quota directly restrict the quantity of imports.

International Trade

Compared to tariff quotas are more precise and certain in action.

Quotas can be more easily imposed and more easily removed.

Quotas can be used to prevent transmission of recession from foreign countries to home country. When there is recession prices in the foreign country decrease drastically and this is the effect of a tariff. Quotas can avoid such recession induced imports.

Model Question paper
Course Code: HUT 300

Course Name: Industrial Economics & Foreign Trade

Max. Marks: 100

Duration: 3 Hours

(2019-Scheme)

PART A

(Answer all questions, each question carries 3 marks)

1. What is industrial economics?
2. Demand function of a product is given as $D=50-2P$ and supply function $S=20+3P$. What will be the equilibrium price and quantity of the product?
3. In the production function _____ if $L=36$ how many units of capital are needed to produce 60 units of output?
4. Suppose in the short run $AVC < P < AC$. Will this firm produce or shut down? Give reason.
5. What is going rate pricing?
6. How is equilibrium output determined under perfect competition with TC, TR approach?
7. GDP of a country = 1500 crores, Depreciation = 150 crores, NFIA = 50 crores. Estimate GNP, NDP and NNP
8. Distinguish between a bond and share?
9. Suppose the sum of elasticity of export and import is less than one. What will be the effect of devaluation?
10. What are the merits of quota restrictions?

Industrial Economics and Foreign Trade

PART B

(Answer one full question from each module, each question carries 14 marks)

MODULE I

1. a) What are the merits and demerits of joint stock companies 10
- b) A consumer purchases 50 units of commodity X when its price is Rs.8/- per unit. In the next month he purchased 60 units at the same price. This was due to an increase in the price of another commodity Y from Rs.10 to 12. Calculate cross elasticity of demand and interpret the result. 4

or

2. a) Explain the concepts consumer surplus and producer surplus. 6
- b) Suppose the government imposes a tax on a commodity where the tax burden is met by the consumers. Draw a diagram and explain dead weight loss. Mark consumer surplus, producer surplus, tax revenue and dead weight loss in the diagram. 8

MODULE II

13. a) What are internal and external economies of scale 7
- b) Explain Producer equilibrium with the help of isoquants and isocost line. 7

or

14. a) Explain shutdown point with the help of a diagram. 7
- b) Suppose the monthly fixed cost of a firm is Rs. 40000 and its monthly total variable cost is Rs. 60000.
- i) If the monthly sales is Rs. 120000 estimate contribution and break-even sales. ii) If the firm wants to get a monthly profit of Rs.40000, what should be the sales? 3
- c) The total cost function of a firm is given as $TC=100+50Q - 11Q^2+Q^3$. Find marginal cost when output equals 5 units. 4

MODULE III

15. a) Give examples of non-price competition under oligopoly? 5

Question Papers

- b) Explain the equilibrium of a firm earning supernormal profit under monopolistic competition. 9

Or

16. a) Make comparison between perfect competition and monopoly. 7
 b) Explain price rigidity under oligopoly with the help of kinked demand curve. 7

MODULE IV

17. a) Explain the circular flow in a three sector economy 7
 b) Estimate GDPmp, GNPmp and National income 7
- | | | |
|---------------------------------|----------|----------------|
| Private consumption expenditure | = 2000 | (in 000 cores) |
| Government Consumption | = 500 | |
| NFIA | = -(300) | |
| Investment | = 800 | |
| Net=exports | = 700 | |
| Depreciation | = 400 | |
| Net-indirect tax | = 300 | |

Or

18. a) How inflation affects different groups in the society? 6
 b) What is SENSEX and nifty? 8

MODULE V

19. a) What are the advantages of foreign trade. 7
 b) Explain the comparative cost advantage theory. 7
- Or
20. a) Examine the effects of tariff with the help of a diagram? 10
 b) What are the arguments in favour of free trade? 4

Industrial Economics and Foreign Trade

SI **API ABDUL KALAM TECHNOLOGICAL UNIVERSITY**

Fifth Semester B.Tech Degree Examination December 2021 (2019 scheme)

Course Code: HUT300 Course Name: INDUSTRIAL ECONOMICS & FOREIGN TRADE

PART A

(Answer all questions; each question carries 3 marks)

	Marks
What are the basic economic problems?	3
Explain Production Possibility Curve.	3
Define expansion path.	3
What is margin of safety? What happens when margin of safety is low?	3
What is collusive oligopoly?	3
What is price skimming?	3
How is GDP calculated?	3
Distinguish between Money market and Capital market.	3
What is free trade?	3
What is Devaluation?	3

PART B (Answer one full question from each module, each question carries 14 marks)

Module -1

- 1 a) List out the advantages and disadvantages of Joint Stock Company. 7
- b) Define cross elasticity of demand. A tea manufacturing company was able to sell 1000 kg of tea when the price of coffee was Rs.70 per kg. Later they were able to sell 9000 kg when the price of coffee became Rs.80 per kg. Calculate the cross elasticity of demand for tea. Are the two commodities substitutes or complements? Give reason. 7

OR

- 2 a) Define price elasticity of demand. A company producing soft drink is selling its product for Rs. 22. It sells 1000 units, and then increases the price to Rs.24. Now sales fall to 900 units. What is the price elasticity of soft drink? Is the demand elastic or inelastic? Why? 7
- b) With the help of diagram explain Deadweight loss. 7

Module -2

- 3 a) Explain Law of variable proportion with a diagram. 7
- b) Explain Marginal revenue and Average revenue in Perfect competition and imperfect competition with graph. 7

OR

- 4 a) Define Isoquant curve. Explain the properties of Isoquant curve. 7
- b) The total sales of a manufacturing firm is Rs 20000 in this year. Its variable costs are Rs 8000 while its fixed costs are Rs 6000 for that year. Find the breakeven point of this firm. 7

Module -3

- 5 a) Distinguish between monopoly and oligopoly. 7
- b) With the help of a diagram, explain equilibrium under monopolistic competition. 7

Question Papers

OR

- 15 a) Explain kinked demand curve model. 7
 b) Which are the different types of Non price competition under Oligopoly. 7

Module -4

- 17 a) Explain Circular flow of income in two sector model and four sector model. 7
 b) From the data given below estimate the NDP, using income method and expenditure method. (Items in Rs .Crores)

Consumption expenditure 3000, Investment expenditure 2000, Government expenditure 700, Exports 600, Import 300, Capital Consumption 2000, Wages and salaries 2000, Rent 500, Interest 500, Profit 1000 7

OR

- 18 a) What are the different methods used to control Inflation. 7
 b) From the data given below estimate Gross National Product, Net National Product and National income.

GDP 5000 (in 100 billion), NFIA -50, Indirect tax 70, Subsidies 20, Depreciation 30

Module -5

- 19 a) What is international trade? List out the advantages of Foreign trade? 7
 b) What are tariff barriers? Explain its impact on the economy. 7

OR

- 20 a) What are the arguments in favour of free trade? 7
 b) Explain absolute advantage theory with the help of an example. 7

Answers

As all the questions are direct, answers can be found in the book under the concerned topics. Answers of the numerical problems are given below.

$$11.b) \text{ Cross elasticity of demand}(e_c) = \frac{P_y}{Q_x} * \frac{\Delta Q_x}{\Delta P_y} = \frac{70}{8000} * \frac{1000}{10} = \frac{7000}{8000} = 0.875$$

As the cross elasticity of demand is positive, these two goods are substitutes.

$$12. a) e_p = \frac{P}{Q} * \frac{\Delta Q}{\Delta P} = \frac{22}{1000} * \frac{-100}{2} = -1.1 \quad \text{As the sign is ignored, the value of elasticity is greater than 1. Hence it is more elastic demand.}$$

$$14.b) \text{ BEP} = \text{TFC} / \text{PV Ratio} \quad \text{TFC} = 6000, \text{ PV Ratio} = \frac{S-V}{S} = \frac{20000-8000}{20000} = 0.6$$

$$\text{Therefore BEP} = 6000 / 0.6 = 10000$$

$$17.b) \text{ Expenditure method GDP} = C+I+G+X-M = 3000+2000+7000+600-300 = 6000$$

$$\text{NDP} = \text{GDP} - \text{Capital consumption (Depreciation)} = 6000-2000=4000$$

$$\text{Income method NDP} = R+I+W+P = 500+500+2000+1000 = 4000$$

$$18.b) \text{ GNP} = \text{GDP}+\text{NFIA} = 5000+-50 = 4950,$$

$$\text{NNP} = \text{GNP} - \text{Depreciation} = 4950 - 30 = 4920$$

$$\text{NI} = \text{NNPmp} - \text{Net Indirect Tax} = 4920 - (70-20) = 4870$$

PJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY Sixth Semester B.Tech
Degree Examination June 2022 (2019 Scheme)

PART A

Answer all questions, each carries 3 marks. Marks

Describe factors of production. (3)

What should be the percentage change in price of a product if the sale is to be increased by 50 percentages and its price elasticity of demand is 2? (3)

What is the economic significance of opportunity cost? (3)

Define marginal utility. (3)

What are the features of perfect competition? (3)

Define market structure. (3)

Differentiate between GDP and GNP. (3)

What is money market & define its functions. (3)

What do you mean by BOP? (3)

What is free trade and what are its advantages? (3)

PART B

Answer one question from each module, each carries 14 marks.

Module I

a) What is a production possibility curve? With the help of a production possibility curve, explain 1) Under-utilization of resources 2) Full employment of resources. (8)

b) What are the components of demand and state law of demand? (6)

OR

2 a) Explain the law of diminishing marginal utility with diagram? (8)

b) State the law of supply and explain the determinants of supply. (6)

Module II

3 a) Discuss cost-output relationship in short-run and long-run. (8)

b) What are isoquant curves? State their properties. (6)

OR

4 a) In a production function, $Q=2L^{1/2}K^{1/2}$. If $L=36$, 1) How many units of capital are needed to produce 60 units of output. 2) In the production function, $Q=2L^{1/2}K^{1/2}$ determine the percentage increase in output if labour is increased by 10% assuming capital is held constant. (8)

b) Explain the law of variable Proportions. (6)

Module III

5 a) Compare the market situation of perfect competition with monopoly. (8)

b) What is collusive oligopoly? (6)

OR

16 a) What is pricing and what are the different methods used for pricing? (8)

b) Explain kinked demand curve. (6)

Module IV

17 a) Explain the methods of national income calculation. (8)

b) What are the difficulties in the measurement of NI? (6)

OR

18 a) What is inflation and what are the fiscal policy measures to control inflation? (8)

b) What is repo rate and how it controls inflation? (6)

Module V

19 a) State and explain the Heckscher -Ohlin theory of international trade. (8)

b) What do you mean by devaluation? Explain the conditions for its success. (6)

OR

20 a) Explain any four measures to solve the problem of deficit in the balance of payments. (8)

b) List any six arguments in support of protectionism. (6)

INDUSTRIAL ECONOMICS & FOREIGN TRADE

(Numerical Problems and Answers)

What should be the percentage change in price of a product if the sale is to be increased by 50 percentages and its price elasticity of demand is 2?

(i)

$p = \frac{\text{Percentage change in quantity demanded}}{\text{Percentage change in price}}$

Percentage change in price

$$2 = \frac{50}{\% \text{ change in price}} \quad \text{Therefore, } \% \text{ change in price} = 50/2 = 25\%$$

14. a) In a production function, $Q=2L^{1/2}K^{1/2}$. If $L=36$, 1) How many units of capital are needed to produce 60 units of output. 2) In the production function, $Q=2L^{1/2}K^{1/2}$ determine the percentage increase in output if labour is increased by 10% assuming capital is held constant. (8)

$$\text{When } Q=60 \text{ and } L=36, 60=2 * K^{1/2} * 36^{1/2} \quad \text{ie } 60=2 * K^{1/2} * 6$$

$$\text{Therefore } K^{1/2} = \frac{60}{12} = 5 \quad \text{Therefore } K = 25$$

$$\log Q = \log 2 + \frac{1}{2} \log L + \frac{1}{2} \log K$$

$$\frac{1}{Q} dQ = 0 + \frac{1}{2} * \frac{1}{L} dL + \frac{1}{2} * \frac{1}{K} dK$$

$$= \frac{1}{2} * 10 + 0 = 5\%$$

PART A

(Answer all questions; each question carries 3 marks) Marks

- 1 Why does the problem of choice arise in an economy? 3
- 2 What is inelastic demand? 3
- 3 What do you mean by labour augmenting technical progress? 3
- 4 Suppose $AC > Price > AVC$. Will a producer produce or shutdown in the short run? Give reason. 3
- 5 Why a firm under perfect competition is called a price taker? 3
- 6 What is collusive oligopoly? 3
- 7 Distinguish between final goods and intermediate goods. 3
- 8 What is a Trading account? 3
- 9 Point out any three items coming under unilateral transfers account. 3
- 10 What is balance of payments? 3

PART B

(Answer one full question from each module, each question carries 14 marks)

Module -1

- 11 a) Draw total utility and marginal utility curves and derive the three relations between marginal utility and total utility. 7
- b) What is cross elasticity of demand? Suppose cross elasticity of demand between X and Y is 0.5. If there is a 50 percent change in the price of Y, what will be the percentage change in the quantity demanded of X? 7

OR

- 12 a) What is deadweight loss of a tax? Examine the consumer and producer surplus before and after a tax with the help of a diagram. 7
- b) The demand function of a product is given as $D = 60 - 2P$ and the supply function $S = 30 + 4P$. Estimate equilibrium price and equilibrium quantity. Also find the excess supply when Price equals Rs.6? 7

Module -2

- 13 a) What do you mean by returns to scale? Represent it using a figure. 7
- b) Suppose a firm pays Rs.10000 as monthly rent and Rs.10000 as interest payment. Its monthly expenditure on raw materials is Rs.40000 and it get monthly sales revenue of Rs.80000. The price of one unit of output is Rs.40. Estimate i) PV Ratio ii) Break even sales iii) Break-even output iv) Profit earned v) Margin of safety 7

OR

- 14 a) How will you explain producer's equilibrium with the help of an isoquant and isocost line? 7

he total cost function of firm is given as $TC=500+5Q - 4Q^2+Q^3$. Estimate TFC and MC when output equals 10 units. 7

Module -3

1) Make a comparison between monopoly and monopolistic competition. Draw graphs showing the determination of equilibrium under both. 7

2) Explain cost plus and going rate pricing. 7

OR

a) What are the major features of monopolistic competition? Suppose a firm under monopolistic competition is getting supernormal profit. Draw a diagram and explain this situation. 7

State the features of Oligopoly. Why price is rigid under oligopoly? 7

Module -4

a) What is monetary policy? What are the monetary policy measures? 7

How is national income estimated according to the income method? Estimate GDP and NNP from the given data (all figures in Rs. Crores).

Wages and salaries = 800, Rent = 300, Depreciation = 200, Interest = 400, Net indirect tax = 400, NFIA = 100, Profit = 400. 7

OR

8 a) Distinguish between the money market and the capital market 7

b) Suppose the national income of a country is Rs1000 and depreciation equals Rs300. If NFIA equals Rs (-400) and Indirect Taxes equals Rs300, estimate GNP, NDP, GDP and GNP (all figures in Rs. Crores). 7

Module -5

19 a) Examine the comparative cost theory. Point out any two criticisms against this theory. 7

b) What is protection? State any five arguments in favour of protection. 7

OR

20 a) What are the disadvantages of foreign trade? Examine the effects of quotas on international trade. 7

b) Evaluate the success or failure of devaluation when the demand for import is more elastic or less elastic. 7

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

FIFTH SEMESTER B.TECH DEGREE EXAMINATION, DECEMBER 2021

Answers of the numerical problems

4. Will produce. He can cover AVC and a part of AFC. Otherwise, the entire AFC will be the loss.

11.b $0.5 = \frac{\% \text{ change in qty. dd. of } X}{\% \text{ change in price of } X}$

Therefore, % change in qty. dd. of $X = 25$

12.b At equilibrium $D = S$, $60 - 2P = 30 + 4P$ $P = 5$,

Substitute P in one equation $Q = 60 - 2 \times 5 = 50$, When $P = 6$, $D = 60 - 2 \times 6 = 48$

$S = 30 + 4 \times 6 = 54$ Therefore Excess supply $= 54 - 48 = 6$

13.b PV Ratio $= 80000 - 40000 / 80000 = 0.5$ or 50%

BES $= 20000 / 0.5 = 40000$

BEO $= 40000 / 40 = 1000$

Profit $= 80000 - (20000 + 40000) = 20000$

M of S $= 80000 - 40000 = 40000$

14.b TVC $= 5Q - 4Q^2 + Q^3 = 650$

TFC $= 500$

Differentiate the TC or TVC function to get the equation of MC function

MC $= 5 - 8Q + 3Q^2 = 225$

17.b NDPfc $= R + I + W + P = 1900$

NNPfc $= NDPfc + NFIA = 2000$

18.b NNPmp $= NNPfc + NIT = 1000 + 300 = 1300$

NDPmp $= NNPmp - NFIA = 1300 - (-400) = 1700$,

GDPmp $= NDPmp + Dep. = 1700 + 300 = 2000$,

GNPmp $= GDPmp + NFIA = 2000 + (-400) = 1600$

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

B.Tech Degree S6 (R, S) / S6 (PT) (R) Examination June 2023 (2019 Scheme)

PART A

Answer all questions, each carries 3 marks. Marks

- 1 Describe about opportunity cost with an example. (3)
- 2 List out the advantages and disadvantages of Joint Stock Company. (3)
- 3 Given below are the production function of firm A, $Q = 2K^{0.25}L^{0.75}$. The firm uses 5 units of labour (L) and 5 units of capital (K). Calculate the output. If we reduce L by 10%, how much K would be increased to produce the same output. (3)
- 4 Explain how equilibrium price of a commodity is determined. (3)
- 5 Elucidate the features of a monopolistic competition. (3)
- 6 Explain cost-plus pricing. (3)
- 7 Differentiate between GDP and GNP. (3)
- 8 Write a note on stock indices in India. (3)
- 9 Explain Heckscher-Ohlin theory. (3)
- 10 Summarize on Balance of Invisibles. (3)

PART B

Answer one question from each module, each carries 14 marks.

Module I

11a) What is a production possibility curve? With the help of a production possibility curve, explain (i) Trade Off (ii) Why PPC is concave to the origin?

b) Calculate the marginal utility from the following data

X 1	2	3	4	5	6	7	8	
TU	11	19	26	31	34	36	36	30

OR

12a) With a diagram explain deadweight loss and how it is related to taxation. Also explain how the imposition of a tax affects consumer and producer surplus.

b) Suppose the price of coffee rises from Rs. 4.50 per hundred grams to Rs. 5 per hundred grams and as a result the consumer's demand for tea increases from 60 per hundred grams to 70 per hundred grams. Find the cross elasticity of demand of tea and coffee.

Module II

13 a) (i) Explain break-even analysis with a diagram.

(ii) Consider the following data of a company for the year 2022. Sales Rs. 80000, Fixed Cost is Rs. 15000, Variable cost is Rs. 35000. Find the following

(a) Breakeven Sales (b) Contribution (c) Margin of safety (d) Profit. (10)

b) In a firm if $AVC < P < AC$, will the firm shutdown or continue to produce in short run? Explain in detail with diagram where, P-Price, AVC-Average Variable Cost, AC-Average Cost. (4)

OR

14 a) Diagrammatically explain the law of variable proportions. (10)

b) A firm's total cost function is given by the equation, $TC = 4500 + 10Q + 25Q^2$. Write the expression for the following cost concepts. (a) AFC (b) AVC (c) AC (d) MC (4)

Module III

15 a) Compare the market structures: perfect competition, monopoly and oligopoly.

b) What is price skimming? (4)

OR

16 a) Describe on product pricing and explain the different methods used for pricing.

b) Explain kinked demand curve. (4)

Module IV

17 a) Explain in detail the circular flow of income in a four sector model with a neat diagram. (10)

b) Estimate GDPMP, GNPMP and National Income.
 Private consumption expenditure = 2000 (in 000 crores), Government consumption = 500, NFIA = -300, Investment = 800, Net exports = 700, Depreciation = 400 and Net-indirect tax = 300. (4)

OR

18 a) Define Inflation and explain cost push and demand pull inflation. Are the monetary or fiscal measures more effective in controlling inflation? (10)
 b) Write notes on i) Bonds and Shares ii) Demat Account (4)

Module V

19 a) Compare the theory of absolute advantage and the theory of comparative advantage with examples. (10)
 b) Examine any two effects of tariff in international trade. (4)

OR

20 a) Differentiate between free trade and protectionism. Also discuss on the current account component of balance of payment. (10)
 b) What do you mean by devaluation? Explain the conditions for its success. (4)

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
 SIXTH SEMESTER B. TECH DEGREE (R&S) EXAMINATION, JULY 2023

Answers of numerical Problem

3.

$$3. Q = 2K^{0.25}L^{0.75} \text{ When } K = 5 \text{ and } L = 5 \quad Q = 2 * 5^{0.25} * 5^{0.75} = 10$$

$$10 = 2K^{0.25}L^{0.75} \text{ When } L \text{ is reduced by } 10\% \text{ the equation become}$$

$$10 = 2 * K^{0.25} * 4.5^{0.75} \text{ ie } K^{0.25} = 5 / 3.089 = 1.619 \text{ ie } K^{1/4} = 1.619$$

$$\text{Therefore } K = 1.619^4 = 6.867$$

That is capital is to be increased by 1.867 units.

$$\text{Percentage increase} = (1.867 / 5) * 100 = 37.34$$

11.b	X	1	2	3	4	5	6	7	8
	TU	11	19	26	31	34	36	36	30
	MU	11	8	7	5	3	2	0	-6

$$12.b (4.5/60) * (10/0.5) = 45/30 = 1.5$$

$$13.a \text{ PV Ratio} = (80000 - 35000) / 80000 = .5625$$

$$\text{BES.} = \text{TFC} / \text{PV Ratio} = 15000 / .5625 = 26666.67$$

$$\text{Contribution} = S - V = 80000 - 35000 = 45000$$

$$\text{Margin of Safety} = \text{Actual Sales} - \text{Break-even sales}$$

$$85000 - 26666.67 = 53333.33$$

$$\text{Profit} = TR - TC = 80000 - (15000 + 35000) = 50000$$

$$\text{b (a) } AFC = TFC/Q = 4500/Q \quad \text{(b) } AVC = TVC/Q = 10 + 25Q$$

$$\text{c } AC = TC/Q = 4500/Q + 10 + 25Q \quad \text{(d) } MC = d(TC) = 10 + 50Q$$

$$d(Q)$$

$$\text{b GDPmp} = C + I + G + (X - M) = 2000 + 800 + 500 + 700 = 4000 \text{ crores}$$

$$\text{c } NPmp = GDPMP + NFIA = 4000 + (-300) = 3700$$

$$\text{d } \text{National income or NNPfc} = GNPmp - \text{Depreciation} - \text{NIT} = 3700 - 400 - 300 = 300$$

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Sixth Semester B.Tech Degree Supplementary Examination May 2023 (2019

Scheme

PART A

Answer all questions, each carries 3 marks. Marks

- 1 What are the determinants of supply? (3)
- 2 What are the three central problems of an economy? (3)
- 3 Distinguish between Fixed cost and variable cost. (3)
- 4 Define break-even point. (3)
- 5 Explain oligopolistic competition with its features. (3)
- 6 What is price skimming? (3)
- 7 How does open market operation work to affect the money supply? (3)
- 8 What are the difficulties in the measurement of national income? (3)
- 9 Distinguish between exchange depreciation and devaluation. (3)
- 10 What do you mean by Balance of Trade? (3)

PART B

Answer one question from each module, each carries 14 marks.

Module I

- 11 a) Explain various types of price elasticity of demand and state its formula. (10)
- b) Explain the concept of cross elasticity of demand. (4)

OR

- 12 a) What is Joint Stock Company? Discuss the advantages and disadvantages of Joint Stock Company. (10)

- b) What happens to consumer and producer surplus when the sale of a good is taxed? (4)

Module II

- 13 a) Explain the assumptions, uses and limitations of break- even analysis. (10)

b) Distinguish between social cost and private cost. (4)

OR

14 a) Derive an equation for break-even quantity with the help of break-even chart

b) Explain two reasons why internal diseconomies might occur. (4)

Module III

15 a) What is perfect competition? Why does the demand curve of a firm facing perfect competition is perfectly elastic? (10)

b) Explain predatory pricing method. (4)

OR

16 a) Compare and differentiate between perfect competition, monopolistic competition and monopoly. (10)

b) Explain Going rate pricing. (4)

Module IV

17 a) Describe the circular flow concept using a four sector model. (10)

b) State the importance of money market. (4)

OR

18 a) What are the monetary measures of controlling inflation? Are the monetary or fiscal measures more effective in controlling inflation? (10)

b) What is stock index? Give examples. (4)

Module V

19 a) Differentiate between the theory of absolute advantage and the theory of comparative advantage. (10)

b) What is a free trade & what are its advantages. (4)

OR

20 a) Explain the causes for and the methods of correcting disequilibrium in BOP.

b) What are types of non-tariff barriers? (4)

INDUSTRIAL ECONOMICS and FOREIGN TRADE

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